



GEARING UP CASE STUDY REPORT

Western University & Brandon University

 Developing Mining Talent Through Work-Integrated Learning



MINING INDUSTRY
HUMAN RESOURCES COUNCIL





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Gearing Up Case Study

Volume 1

Western
UNIVERSITY • CANADA



BRANDON
UNIVERSITY



The Mining Industry Human Resources Council (MiHR) is Canada's knowledge centre for mining labour market information (LMI). MiHR produces LMI for industry stakeholders to enable the sector to address labour market challenges such as recruitment, retention, workforce diversification and training.

MiHR's 2019 Canadian Mining Industry Labour Market Outlook report highlights the need to hire approximately 100,000 workers in the next decade. Older workers are leaving, total enrolment across all 10 Canadian mining engineering programs is down 45% since 2015, and STEM occupations are becoming more prevalent with the adoption of new technology. It can also take anywhere from two to five years to train a skilled worker for the mining industry.

Where are companies going to find the next generation of mining talent?

There is no silver bullet to face this challenge. Industry needs to take a collaborative approach to grow the labour pool and to attract top talent – distinguishing themselves as employers of choice.

Industry also needs to make better use of all potential sources of talent. Women only made up 16% of the mining labour force in 2016, while internationally-trained professionals accounted for 13%.

To help shape the next generation of Canada's mining workforce, the Government of Canada provided MiHR with funding support through its Student Work Placement Program to create the Gearing Up program. Gearing Up brings mining employers, service providers, industry associations and post-secondary institutions together to create new work-integrated learning (WIL) opportunities for post-secondary students to be better positioned to secure employment in mining.

Gearing Up changes the way students in mining-related post-secondary educational programs perceive, pursue and acquire the skills needed for in-demand mining careers. It offers wage subsidies to Canadian mining employers that create new WIL opportunities for students enrolled in science, technology, engineering and math (STEM) or business programs. Opportunities can include co ops, internships, field placements, applied projects, capstone projects and case competitions.



Gearing Up wage subsidies are tiered to promote early attachment to, and diversity in, high-demand mining occupations.

Employers can receive subsidies up to 75 per cent of the wage cost for a placement. The maximum wage subsidy per placement is \$7,500.



The following study showcases examples of how Gearing Up was adopted, what WIL placements are like, and the benefits to the companies, post-secondary institutions and students involved.

CASE STUDY 1 WESTERN UNIVERSITY

Neil Banerjee, an associate professor of earth science at Western University, and the NSERC/Yamana Gold Inc. Industrial Research Chair in Advanced Mineral Exploration, has always wanted his students to gain career experience early in their education. He first heard about the Gearing Up program at the 2018 Prospectors & Developers Association of Canada (PDAC) conference, and while intrigued by the opportunity to increase the numbers of his students with career experience earlier in their education, he was not convinced its implementation would be successful.

“Due to how universities handle regular internships, I was a little bit hesitant,” said Banerjee. “With many first year students not previously being exposed to mining or having co-op experiences, I didn’t think this was something that would work for us.”

Nevertheless, Neil applied to the program to see if Gearing Up could provide his students with subsidies/funding that would lead to relevant work experience.



Neil Banerjee, Associate Professor of Earth Science, Western University and NSERC/Yamana Gold Inc. Industrial Research Chair in Advanced Mineral Exploration

“The Gearing Up application process was simple, probably about the easiest application I’ve ever attempted in about 12 years at the university.”
– Neil Banerjee

The application for a Gearing Up wage subsidy is just one page. Available on MiHR’s website, companies can submit as many applications as they desire.

In summer 2018, Banerjee hired 12 students through Gearing Up to work on a variety of mining industry challenges, with real world applications for companies such as Yamana Gold, Teck, Goldcorp and more.

“The vast majority of students involved had never thought about mining as a potential career,” Banerjee said. “Now it’s something that they recognize as a very possible area that they could eventually work in. Work-integrated learning is invaluable to students in university programs, because it shows them that their studies are applicable to many more fields than they may realize.”

“The value of WIL is that it allows students to go beyond what would normally be comfortable in terms of discipline-specific training, and to recognize that their skills and abilities can transcend the traditional sort of disciplinary silos.”

Shayna Kay, second-year Western University Integrated Science Student specializing in Biology



Neil was right – most of the undergraduate students who took part in the summer advanced research projects had never thought twice about working in mining before their Gearing Up experience, but their 12 week internships opened their eyes to the vast possibilities the industry holds.

“I really didn’t know a lot about mining,” said Shayna Kay, a second year integrated science student specializing in biology. “Gearing Up showed me it’s a good career option and just really opened up my mind to different career paths in biology, without going straight to medical school.”

Kay said she worked with her peers on an assortment of projects, learning to manage various responsibilities and objectives.

“No two days were the same; there were a lot of different aspects. Data collection, analysis, report writing, creating posters and oral presentations, planning events and more.”

Looking back on her experience, Kay is proud of what she has accomplished.

“It’s really rewarding to see how far I’ve come from the beginning, to see the hard work that all of us put in was able to produce real results that can help people and help companies,” she said. “Now I can be confident in my knowledge and skills to solve any problems I might be given about the mining industry.”

From knowing very little about the mining industry before her placement interview, to having a rich understanding of what it takes to enter the industry, Kay is now well on her way to confidently picking a career path.

“I will definitely consider pursuing a job in mining. I’m not exactly sure what I’d want to do but I’m really happy that I have this opportunity to see a bunch of different options,” she said.

“I can work in the mining industry and do anything.”
– Shayna Kay

Miranda Postma, a third year integrated science student focusing on environmental science, also participated in the summer projects. Along with the chance to develop and strengthen her soft skills, the experience broadened her opinions of the mining industry beyond what she had learned in the classroom. Coming from an environmental science background, she said there was some negativity surrounding the industry in her lectures.

“We talk a lot about the negative aspects of mining, like the tailing ponds and how they’re toxic and how they ruin the environment,” Postma said. “So going into mining seemed kind of like the antithesis of everything I was learning, which is kind of something potentially that our education system could work to fix because as I learned, that’s not really how it is.”

Right: **Miranda Postma**, third-year Western University Integrated Science student focusing on Environmental Science



“People working in mining do care about the environment, and they’re actively trying to improve their technologies, and they need people in environmental science to help with that.”

- Miranda Postma

She said that of all of her projects, her favourites involved creating a demo for a mining museum, and tracking the effects of growing plants in metal solutions. The students worked on various projects in small teams, with each student getting to act as managers for one project, and associates on all others they worked on.

“Looking back at the end of the summer and just seeing everything we’d accomplished was just incredibly satisfying.”

She said she also enjoyed getting to use advanced technologies – such as Canada’s national synchrotron facility, the Canadian Light Source in Saskatoon – to find creative solutions to more challenging problems: “It was awesome and fascinating!”



Miranda and other students work on portable greenhouse project.

Overall, Miranda's summer position was able to change some of her perceptions of the mining industry.

"The more experience I have with mining, the more I consider it," Postma said. "I'm really excited about the innovation side. Learning to do things differently, so we can have less impact on the environment and be more efficient, potentially using new materials and resources, that's the part that really excites me; I want to try new things."

"Gearing Up has been incredibly successful for us. Moving forward, I look to increase the number of students that Western University has take part in the program. It's a win-win for the students, school and industry."
- Neil Banerjee



The portable greenhouse uses mason jars as planters

CASE STUDY 2

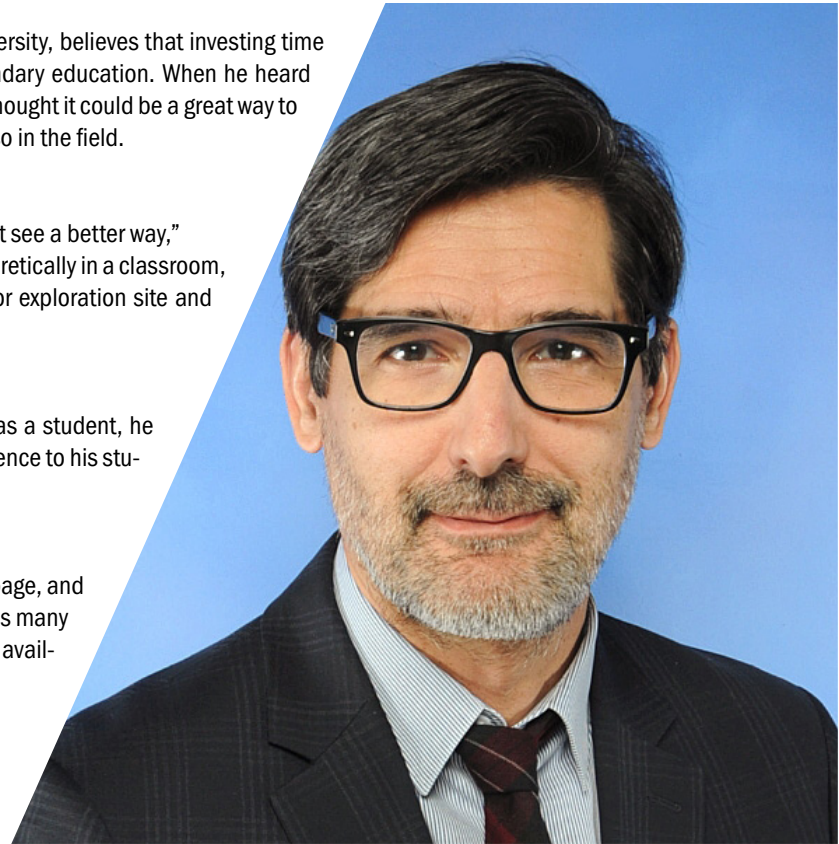
BRANDON UNIVERSITY

Paul Alexandre, a professor of geology at Brandon University, believes that investing time into students' success is an integral part of post-secondary education. When he heard about the Gearing Up program through a colleague, he thought it could be a great way to help his students grow not only in the classroom, but also in the field.

"Work-integrated learning is the best way to learn, I don't see a better way," Alexandre said. "It's one thing to sit and learn things theoretically in a classroom, but it's a completely different beast to be in the mine or exploration site and work day in, day out."

Having had a similar internship opportunity when he was a student, he jumped at the chance to provide the same sort of experience to his students.

The application for a Gearing Up wage study is just one page, and is available on MiHR's website. Companies can submit as many applications as they want, and support will always be available if applicants have any questions.



Right: **Paul Alexandre**, Professor of Geology, Brandon University

"I am very pleased with the program. I have been quite impressed with how MiHR goes about its business; the whole process of applying and being approved was very straightforward."

- Paul Alexandre

Through Gearing Up, Alexandre helped two of his students get work placements in February 2019 at Havilah Mining, an American company with various exploration sites in southeastern Manitoba. He said he helped his students with their experiences through guidance and training.

"We have discussions every day, I give them clear instructions of what they need to do, and we also discuss the purpose of what they're doing, and how it fits into the overall project, so they know how their work contributes to the completion of the specific research project. Whatever training needs to be done, I will provide it."

Taylor McPherson, fourth-year Brandon University Geology and Geography student



Alexandre also said he saw improvements in his students' ability in his classes since their placements. "What I teach is very practical, it relates strongly to the mining industry, and suddenly I can see they understand much better what I'm talking about."

Both students were pleasantly surprised to receive job offers after completing their WIL opportunities.

"I actually ended up getting a job with them this summer, through my work experience with Gearing Up. I'm actually starting my job there on May 15 for the summer," said Taylor McPherson, a fourth-year Geology and Geography student at Brandon University. "I'm really excited. It's phenomenal. It's a really cool experience and it's really hard for geology students to get summer work, so being able to do that was a really, really good step forward."

McPherson worked at Havilah's Bissett, Manitoba exploration site, creating thin sections of various rock samples to identify various minerals and metals.

"I've been working in the analytical lab doing petrography, where I've been able to take my schooling and put it in practice," she said. "There's been so many aspects that I've been able to take from courses that I've been doing and directly relate that to the knowledge needed for working in exploration."

She said a combination of on-site work with Havilah, and regular discourse with Alexandre helped her better understand her major, while also developing soft skills and elevating her passion for geology.

"It's just fundamentally improving my understanding of geology, my writing skills, and different interpretation skills, so overall it's just creating such a better opportunity for me to learn, which is a really good thing."

"Being able to actually meet and talk to geologists that are on the ground doing the work — talking to them is fundamental to pursuing a career in geology. When you actually put your feet on the ground and do things, that's what pulls you in."

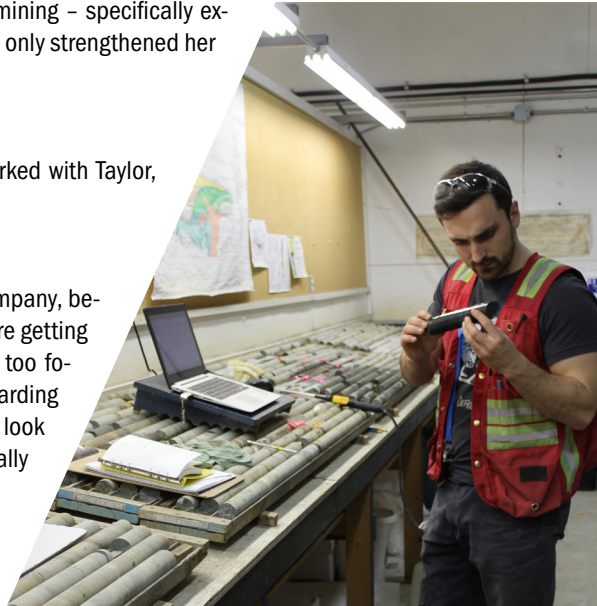
- Taylor McPherson

McPherson said that she always planned to work in mining – specifically exploration – and that talking to other geologists on-site only strengthened her career decision.

Gideon Jungen, a third-year geology student who worked with Taylor, had a similarly positive experience.

“It was nice to see how it feels to work for a mining company, because I think a lot of students have no clue what they’re getting into, because I think University sometimes is a little too focused on memorization,” Jungen said. “It was very rewarding to get the chance to actually go to a mine and have a look around, and talk to the geologists who answered basically every question we had.”

He detailed that their experience was successful and informative, despite some weather challenges that delayed their work.



Gideon Jungen, third-year Brandon University Geology student
Left: Gideon working on core samples at Havilah's Bissett Mine



“We’d planned to go up a little earlier than we did but a snowstorm kind of hindered our driving. We had to go up there and squeeze at least a week’s worth of work into just three days. We took 115 samples that week, and the whole process took its sweet time but I think we did a good job.”

Havilah also offered Jungen a summer job, but he decided to pursue another offer he had received to explore the engineering side of mining. He said he has always been looking to work in the mining industry, but is now interested in broadening his horizons before picking his path.

“What I’m doing now is basically figuring out what I’m most interested in – do I want to do geophysical work, or focus more on the geochemical work or exploration work? So, it’s about narrowing it down.”

Overall, he said his work-integrated learning experience was “advantageous”, and that it should be an essential part of the post-secondary education system.

“It’s highly important. In my opinion, every student should be required to get some sort of work placement.”
-Gideon Jungen

“The Gearing Up program has been endlessly beneficial for both Brandon students, and the school itself. I’m approved for another two placements for this year and I will definitely fill them, and I most definitely foresee using more this year, and next as well.”

- Paul Alexandre



Notes

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An aerial photograph of an industrial facility, possibly a refinery or chemical plant, with various storage tanks, pipes, and buildings. The image is overlaid with a semi-transparent blue filter. A large, bright yellow circle is centered over the middle of the image, and the text 'mihr.ca' is written in white across it.

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