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**Expanding Opportunities: Postgraduate
Studies at the Nexus of Migration,
Internationalization, and Integration**

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Editors:

**Antje Ellermann, Alessandra Santos, Matthew Wright and
Gaoheng Zhang**

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The Centre for Migration Studies (CMS), a UBC Research Excellence Cluster, was established as a university-level centre in the Faculty of Arts in 2020 as one of the strategic initiatives of the University of British Columbia (UBC). The Centre's mandate is to provide an interdisciplinary home for migration and mobility research at UBC and promote cutting-edge research, graduate training, and community and policy outreach on issues of migration. Within UBC, the Centre is supported by UBC's Excellence Funds, the Faculty of Arts (Dean's Office), the Departments of Political Science, Sociology, Geography, Anthropology, Central, Eastern and Northern European Studies, and the Peter A. Allard School of Law.

Abstract

Higher education institutions in Canada have witnessed a surge in the number of international students and mature immigrant students. Research has established a positive correlation between attending higher institutions and immigrant and international students' labour market outcomes. It is, however, not known *how* attending higher education may have worked to advance people's professional careers. Neither do we know how the increasing number of students with migratory experiences may have impacted higher education and professions in terms of knowledge and practice. Drawing on a qualitative study with immigrants with engineering backgrounds who attended postgraduate studies in Canada, this paper provides some insights into these questions. In particular, it sheds light on the unique position that postgraduate studies occupy in the life trajectories of the respondents, the ways in which they benefited from the programs, as well as the impacts they brought to the engineering profession. Special attention is paid to the features of postgraduate programs that enabled the respondents to expand both their professional and life opportunities and the existing knowledge and practices within the engineering profession. Theoretically, the study benefits from a practice-based conception of immigrant as "distinctive knowledge practitioners". Empirically, the study brings together life history research and situational analysis.

KEYWORDS: postgraduate studies, immigrants, engineering, international students, life history, situational analysis

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Introduction

Higher education plays an increasingly important role at the nexus of immigration, internationalization, and integration in Canada. Research has established a positive relationship between attending higher education in Canada and adult immigrants' and international students' labour market outcomes.¹ Yet, it is not known *how* higher institutions may have worked to enhance professional and life opportunities for adult students with migratory backgrounds. More importantly, rarely has research addressed how the increasing number of students with migratory experiences may have influenced higher education and professions in terms of knowledge and practice. This paper addresses these questions with an examination of the experiences of seventeen migrants with engineering backgrounds who have attended postgraduate studies in Canada. Specifically, it investigates how the respondents benefited from their programs as well as how they expanded engineering knowledge and practices through attending postgraduate programs. The paper is premised on the assumption that the impacts that the respondents brought to the engineering profession are an interactive effect of their participation in postgraduate studies in Canada and their distinctive life trajectories as immigrants.

The paper first introduces the context of the study, followed by a conception of immigrants as distinctive knowledge practitioners by drawing on the practice-based perspectives. Then, the research methods are introduced, the findings are presented and their implications for higher education are discussed.

Higher Education at the Nexus of Migration, Internationalization, and Integration

Higher education institutions have undergone a sea change in Canada. Among others, they have witnessed a surge in the number of students with migratory experiences, i.e., mature immigrants and international students.

1. Maria Adamuti-Trache, "First 4 Years in Canada," *Journal of International Migration and Integration* 12, no.1 (2011): 61-83; Rupa Banerjee and Anil Verma, "Determinants and Effects," Working Paper No. 11, CLSRN, 2009: 1-48; Zong Jia Chen and Mikal Skuterud, "Relative Labour Market Performance," *Canadian Public Policy* 44, no. 3 (2018): 207-225; Feng Hou and Yuqian Lu, "International Students, Immigration and Earnings Growth." *IZA Journal of Development and Migration* 7, no. 1 (2017): 1-24.

Research has documented that immigrants, particularly skilled immigrants who are admitted to Canada based on their educational and work experiences, tend to return to school after immigration.² In Adamuti-Trache's analysis of a longitudinal survey of immigrants to Canada, 46 percent of immigrants enrolled in post-secondary education (PSE) within four years of arrival, and 17 percent of immigrants participated in university education.³ The study suggests that participants in universities are more likely to improve their employment outcomes than non-participants and participants in other kinds of educational and training programs. It also shows that immigrants' choice of PSE is the result of the interplay of a range of structural and individual factors, which include but are not limited to issues of recognition in terms of foreign credentials and prior work experiences, language proficiency in English/French, occupational aspirations, and perceived value of Canadian education. Similarly, Banerjee and Verma and Walton-Roberts also suggest that attending higher education is considered a way for immigrants to gain Canadian qualifications and Canadian-specific knowledge, to signal skills to Canadian employers, and to foster social connections in a relatively safe space.⁴

In the meantime, the number of international students has been on the rise in Canada especially at the postsecondary level. According to IRCC, by the end of 2019, before the hit of the COVID-19 pandemic, there were 642,480 international students in Canada; 77.6 percent of them were enrolled at postsecondary institutions.⁵ International students today are not only perceived as a way to address decreased funding for higher education, they are also considered an ideal pool of immigrants.⁶ Presumably, by receiving Canadian education, they develop proficiency in at least one official language, and accumulate Canadian work experiences that position them well to integrate into the host society.⁷ As such, while international students were previously expected to return to their home countries, since 2008, a two-step immigration pathway has been created for them. International students are not only allowed to work while

2. Adamuti-Trache, "First 4 Years," 61-83; Banerjee and Verma, "Determinants and Effects," 1-48; Feng Hou, Yuqian Lu, and Christoph Schimmele. "Recent Trends in Over-Education," Statistics Canada (2019): 1-23.

3. Adamuti-Trache, "First 4 Years," 61-83.

4. Banerjee and Verma, "Determinants and Effects," 1-48; Walton Roberts, "Immigration, the University," 453-473

5. IRCC, "Temporary Residents," Government of Canada (2020).

6. Creso M. Sa and Emma Sabzalieva, "The Politics of the Great Brain Race," *Higher Education* 75, no. 2 (2018): 231-253.

7. Colin Scott, Saba Safdar, Roopa Desai Trilokekar, and Amira El Masri. "International Students as 'Ideal Immigrants' in Canada," *Canadian and International Education* 43, no. 3 (2015): 58-73.

studying, but upon graduation they can also apply for post-graduate work permit (PGWP) and/or immigration. An interesting fact to note is that combined with holders of PGWP, international students make up more than 60 percent of the temporary labour force in Canada.⁸ As well, international students have become a mainstream of immigration, accounting for 18 percent of all immigrants to Canada in 2018.⁹

Clearly, institutions of higher education have played an increasingly important role in recruiting and retaining international students in Canada,¹⁰ and unwittingly perhaps in integrating immigrants into the host society.¹¹ Existing research has established a positive correlation between attending Canadian higher education and immigrants' and international students' labour market outcomes.¹² It is generally assumed that immigrants and international students get to extend their social and cultural capital through attending Canadian educational institutions.¹³ It is not known, however, how higher institutions have produced such effects. More importantly, little attention has been paid to how the increasing number of international and immigrant students might be contributing to higher education and their professional fields in terms of knowledge and practices in Canada. This paper seeks to address these issues from a practice-based perspective of immigrants as distinct knowledge practitioners.

Immigrants as “Distinct” Knowledge Practitioners: A Practice-Based Construction

Underutilization of immigrant skills and knowledge is a persistent challenge in immigrant host countries such as Canada.¹⁴ Related debates point to two major issues: i) the transferability

8. Sandra Schinnerl, “The Influence of Higher Education” (PhD diss., the University of British Columbia, 2021).

9. Schinnerl, “The Influence of Higher Education.”

10. Ibid.

11. Banerjee and Verma, “Determinants and Effects,” 1-48; Margaret W. Walton-Roberts, “Immigration, the University,” *Journal of International Migration and Integration* 12, no. 4 (2011): 453-473.

12. Adamuti-Trache, “First 4 Years,” 61-83; Banerjee and Verma, “Determinants and Effects,” 1-48; Chen and Skuterud, “Relative Labour Market Performance,” 207-225; Feng Hou and Yuqian Lu. “International Students,” 1-24.

13. Gulay Ugur Goksel, “The Theory of Recognition” (PhD diss., the University of Colorado at Boulder, 2014).

14. OECD, “How Can Migrants’ Skills be Put to Use?” *Migration Policy Debates*, no.3 (December 2014): 1-4; Jeffrey G. Reitz, Josh Curtis, and Jennifer Elrick, “Immigrant Skill Utilization,” *Journal of International Migration and Integration* 15, no. 1 (2014): 1-26.

of immigrant skills to the local context; and ii) the lack of recognition of foreign qualifications due to institutional exclusion and social discrimination. In either case, immigrants are largely positioned as “replacement knowledge bearers” who need to conform to the knowledge frameworks in the destination countries to fare well in the labour market.¹⁵

In contrast to the dominant discourse, there is also an alternative voice stressing that immigrants’ knowledge and skills are of added value to the host society. In this regard, Williams proposes that immigrants should be recognized as “distinctive knowledge bearers”, and that immigrant knowledge is valuable precisely because it is different.¹⁶ This paper builds on Williams’ proposal of immigrants as distinctive knowledge practitioners given their migratory trajectories. This is not to argue that immigrants’ knowledge is better than that of non-immigrants. It is rather to contend that, given the social, cultural, and geographic distances that immigrants traverse, they are likely to develop ways of knowing and doing that may share commonalities with, as well as differences from, non-immigrants, which constitute a potentiality that could be activated to expand professional practices.¹⁷ By proposing immigrants as distinct knowledge practitioners, the paper does not seek to take stock of the distinct knowledge that immigrants bring with them. It rather aims to understand the practices that enable immigrants to leverage their unique positionality as boundary spanners and mobilize their ways of knowing and doing within professions.

The attention to enabling practices is inspired by the practice turn in social sciences,¹⁸ where practice can be visualized as “an open-ended, spatially-temporally dispersed nexus of doing and saying.”¹⁹ By looking to the practice turn, it is foremost possible to see the complexity

15. Allan M. Williams, “Listen to Me, Learn with Me,” *British Journal of Industrial Relations* 45, no. 2 (2007): 361-382; Shibao Guo and Hongxia Shan. "The Politics of Recognition." *International Journal of Lifelong Education* 32, no. 4 (2013): 464-480.

16. Allan M. Williams, “Listen to Me, Learn with Me,” *British Journal of Industrial Relations* 45, no. 2 (2007): 361-382

17. Hongxia Shan, “Knowledge 'Transfer' as Sociocultural and Sociomaterial Practice,” *European Journal for Research on the Education and Learning of Adults* 11, no. 3 (2020): 383-397; Williams, “Listen to Me, Learn with Me,” 361-382.

18. Theodore R. Schatzki, “Introduction: Practice theory,” in *The Practice Turn in Contemporary Theory*, ed. Karin Knorr Cetina, Theodore R. Schatzki and Eike von Savigny (New York: Routledge, 2001), 10-23, doi:10.4324/9780203977453; Theodore R. Schatzki, "A Primer on Practices: Theory and Research," in *Practice-Based Education: Perspectives and Strategies* edited by Higgs, Joy, Ronald Barnett, Stephen Billett, Maggie Hutchings, and Franziska Trede (Rotterdam: SensePublishers, 2012), 13-26, doi:10.1007/978-94-6209-128-3

19. Schatzki, "A Primer on Practices," 14

of immigrants' subject position. Rather than seeing them merely as newcomers and learners who need to fit in, immigrants are seen as individuals with agentic potential within dynamic practices where they might play multiple roles. In the meantime, rather than celebrating individual immigrants as transformers of practices, it is also possible to see that agency for change might be distributed among all constituents of practices.²⁰ Within the practice turn, there are multitude of constructs of practice, which simultaneously sensitize us the normative and the emergent properties of sociocultural and sociomaterial practices.²¹ Practices are normative as they are constituted through communities, mediating cultures, cultural artefacts, tools and technologies, and a shifting political economy of demand, distribution and supply. They are emergent as they are enacted and performed moment to moment, and are contingent on the encountering of individual entities, both human and non-humans, in the formation of action networks and assemblage, durable and ephemeral.

Research Methodology, Methods, and Research Respondents

Empirically, this study draws on a qualitative study that focuses on the professional impacts brought about by immigrant engineers in British Columbia, Canada. This study sought to talk to engineers from non-Western countries who have contributed to the engineering profession in Canada. This is because the literature has documented well the barriers immigrants, particularly immigrants from non-Western countries, face with professional employment, and yet, there is little knowledge of them making impacts within professions.²²

To identify respondents, the research team searched online professional media published from January 2010 to November 2021 for events and reports where immigrant professionals were featured/mentioned as someone who has brought changes to the profession. The search identified twenty-seven immigrants who have brought changes or impacted the engineering profession, and who came from non-Western countries. We reached out to all of them by email, and fourteen of them responded to our study. In the meantime, we also sent out a call for

20. Hongxia Shan, "Distributed Pedagogy of Difference: Reimagining Immigrant Training and Education," *The Canadian Journal for the Study of Adult Education (Online)* 27, no. 3 (2015): 1-16.

21. Tara J. Fenwick, Richard Edwards, and Peter H. Sawchuk. *Emerging Approaches*, 1-215.

22. Reitz, Curtis, and Elrick. "Immigrant Skill Utilization," 1-26; Shan, "Distributed Pedagogy of Difference," 1-16

respondents to eleven professional and professional ethnic organizations, twenty-two big companies, and ten small engineering businesses. Eighteen respondents elected to respond to the study. Additionally, we also interviewed two who were nominated by the research participants in the study. All of the thirty-four interviewed respondents came to Canada between 1998 and 2018. All obtained at least a bachelor's degree outside of Canada and were working in engineering in BC at the time of the interview.

Among the thirty-four respondents, seventeen had attended postgraduate programs in Canada. Among these seventeen respondents, ten had obtained master's degrees, six PhD degrees as their highest degrees, and one was still in the process of completing a master's program in Canada at the time of the interview. The paper focuses on the experiences of the seventeen respondents with higher education experience in Canada. Out of the seventeen respondents, twelve had come to Canada as international students and five were immigrants who had returned to university in Canada. Twelve respondents were male and five female. They originated from Bangladesh (one), China (one), India (two), Iran (seven), Mexico (four), Pakistan (one), and Taiwan (one).

Given the COVID-19 pandemic, all interviews were conducted online over Zoom between August 2020 and January 2022. The interviews were semi-structured to allow respondents to relate their educational, professional and migration history, and to elaborate on a significant contribution and impact that they have made in the engineering profession in Canada. All thirty-four interviews were transcribed verbatim except for two who declined to be recorded, including one who attended higher education in Canada. All transcripts were sent back to the respondents for member check.

Life history analysis²³ and situational analysis²⁴ were then simultaneously used to understand the contributions that immigrants are bringing to the engineering profession in Canada and the conditioning of their accomplishments. For this particular paper, straightforward thematic analysis is conducted to understand the following questions: 1) what prompted the respondents to seek postgraduate programs in Canada, 2) how have the respondents benefited

23. Cole, Ardra L. and J. Gary Knowles. 2001. *Lives in Context: The Art of Life History Research*. Walnut Creek, CA: AltaMira Press.

24. Clarke, Adele E. 2003. "Situational Analyses: Grounded Theory Mapping After the Postmodern Turn." *Symbolic Interaction* 26 (4): 553-576.

from these programs, 3) what kind of changes they have brought to higher education and engineering in terms of knowledge and practices, and 4) what features of postgraduate programs have enabled the respondents to expand both their own life and work opportunities and engineering practices in Canada.

Research Findings

The paper shares the findings related to seventeen respondents who attended postgraduate programs in Canada. It focuses in particular on the role of postgraduate studies in people's life and professional trajectories, the ways in which the respondents benefited from the programs, and the ways in which they expanded existing practices in higher education and engineering. Finally, attention is brought to the features of practices that enabled the respondents to expand opportunities for both the self and the engineering profession as distinct knowledge practitioners.

Postgraduate Programs in Respondents' Life Trajectories

“When I was doing all the assessments, I was thinking, the first thing that I have to do in Canada is to get a degree. When people immigrate to an uncertain environment, what they do is... what I did [was], I actually planned for higher education, so that even if I have to go back to somewhere else, that educational credential that I will earn from Canada... can help me [to get a job anywhere].” (ZX)

ZX applied for immigration from Bangladesh. While waiting for his application result, ZX undertook a master's program in Sweden but had started preparing for life in Canada. What he related above captures the common motives for why respondents chose postgraduate programs in Canada, despite their diverse professional and life trajectories. These motives are related to educational aspirations, career and life opportunities, and migration and settlement. Across all cases, there is a common belief that higher education is universally valuable and that Canadian credentials are particularly useful to enhancing individual competitiveness in the labour market. For most respondents, postgraduate programs stood at the intersection of their desire for upward mobility in their academic and professional lives on the one hand, and their overall life plan of immigration and settlement on the other—even though Canada might not be necessarily the destination country they all had in mind.

Nine respondents enrolled in postgraduate programs in Canada **mainly to fulfil their educational aspirations**. They intended to upgrade their education as a way to pursue a professional interest. In the case of JK, RF, ZX and CV, they “always wanted upgrade [their] education” (JK). In some cases, they wanted to advance knowledge and develop specialization in an area that was not well developed in their country of origin (ER, QA, ZX). For instance, QA wished to pursue studies in timber engineering as he was inspired at a conference where he learned about new applications of timber structures. He decided to pursue this particular area of practice, and hence chose a master’s program that focused on this specialty, with little consideration about the location of the university. RF applied for postgraduate studies “because I’m a very curious person” and want to learn “how to do research”. DF and QW both explained they pursued education outside of their countries of origin because of a desire to see the world and expand their worldview. QW for instance, said:

“There is a saying in our culture that says if you want to grow, you've got to see the world, right. If you don't see the world, you think that the world is just this small city that you're in or this, you know, the country that you're in. ... there is nothing more. So I really wanted to go out. I really wanted to see the world. And I think I chose a very good, good place when I came here.” (QW)

Regardless of the specific reasons that they related, all preferred to attend a program in Europe or North America if not specifically Canada.

Enhancing professional opportunities was either an implicit or explicit goal for all respondents to attend postgraduate programs. It was hence not surprising to hear that some respondents favoured programs that offered opportunities to gain industrial experience:

“I applied to other programs in Europe and got accepted into three programs. And what made me eventually decide to come to BC was the fact that my master’s of engineering had a co-op program. So, in that sense, I understood that this program was a better chance at getting a position or transition into the workforce.” (GH)

For people who came to Canada as immigrants and who chose to return to higher education (AS, OP, RF, JK, ZX), three decided to do so prior to coming to Canada (AS, OP, ZX). With continuing education in mind, they considered their programs in relation to the need of the Canadian market. For instance, AS searched the market during the last months of her PhD program in Canada and decided that she needed more education to be competitive. She then applied for another master’s program. OP entered a PhD program to build

an alternative life/employment route, re-compose his professional self and flag expertise to employers.

Two respondents (RF, JK) returning to university decided to do so to enhance professional opportunities specifically in Canada. RF related that through postgraduate studies, she was trying to obtain P.Eng. accreditation. JK made deliberate efforts to strengthen the areas of skills that he believed that he needed to improve after immigrating from Pakistan. Upon landing in 1998, he worked for four years in a high-tech electronics manufacturing company. He had always planned to continue his education, but his family did not have enough resources to support his studies. Four years after landing, he enrolled in an engineering master's program that collaborated with an organization responsible for the planning and operation of the electric system and combined it with a business diploma program to gain management skills. He stressed the importance of postgraduate programs in enhancing his managerial, and particularly communication, skills. He said:

“...engineers are lagging behind in managerial skills, soft skills. So that's exactly what I wanted to improve on my soft skills and managerial skills. Also in a future to find a managerial job, which suits my aptitude for higher education.” (JK)

A Canadian postgraduate program can also serve a pathway to immigration. Notably, for the respondents who came to Canada initially as international students, they developed their intent to immigrate before, during and after their studies.²⁵ In seven cases, the respondents clearly sought postgraduate studies in Canada with the goal of immigration in mind. Not all respondents planned to immigrate in the first place, but they started thinking of immigration during their studies or after graduation. Those who decided to immigrate while attending postgraduate programs as international students shared that they discovered Canada to be an attractive place, which helped them firm up their immigration decision. Some regarded Canada as a safe place for raising a family, a friendly workplace for women in engineering, and a country of more freedom and possibilities compared to where they came from:

“as much as I love my country, I find it as a woman, Canada is more friendly in the sense of you being able to develop your career as well as being a mom. I wanted to develop all those aspects of my life, and I feel like Canada is very friendly in that sense. So, as a woman, I feel like that was a motivation for me to come here.” (ER)

25. See also Lisa Ruth Brunner, “Higher Educational Institutions,” *Policy Reviews in Higher Education* 1, no. 1 (2017): 22-41.

Of note, immigration might also be a matter of convenience rather than a permanent plan. In the case of QA for instance, he applied for immigration simply because he was eligible to apply. When asked about his future plan, he was uncertain where he would settle eventually as his extended family were still in Taiwan.

Individual Outcomes through Postgraduate Studies

Through postgraduate programs, some respondents (CV, OP, QW) reported that they **advanced their professional and research skills in their original areas of interest**, whilst others (ER, GH, JK, SK, AS, UI, BN, QA) **explored new areas of knowledge and practices** such as clean energy, engineering management and business operation, biomedical engineering, mechatronics system engineering, natural resources and environmental studies, and process engineering. For most respondents, postgraduate degree programs provided an opportunity to develop knowledge and practical skills. For some other respondents though, the theoretical courses they took were a repetition of what they already studied back in their home countries (KL). A number of respondents pointed to the universal nature of engineering knowledge and commented that engineering is the same in Canada as elsewhere. Those who continued their study in the areas of their prior areas of practice stated that the main difference lies mostly in the codes and industry standards (KL).

Eight participants were immediately employed upon graduation. Some were already involved with the companies through research or co-op projects during their postgraduate programs (CV, AS, QW). Six started working after a period of job search that lasted up to four months (CV, ER, QW, TY, AS, UI). Two participants faced problems with employment. JK could not find the right job after his master's graduation in 2003 for nearly nine months. He moved to the Gulf region and worked there for two years until he landed a job in Canada. Similarly, NM graduated in 2002 with a master in engineering in Canada. He could not find a job and returned to his home country. This is not surprising, as prior to 2008 international students were expected to return to their countries of origin rather than staying on in Canada. He nonetheless decided to come back in 2008 to obtain a PhD degree. Upon his graduation in 2012, he immediately found a job in the industry.

Graduates with PhD degrees applied for postdoctoral positions (OP, UI, QW, ZX) as they transitioned into either academic or industrial employment. OP received a job offer before he started his postdoc. UI took up two postdoc positions while at the same time developing a company he had founded while still enrolled in his PhD program. QW and ZX completed their postdoc positions. QW's postdoc position was funded through a university-industry partnership. After finishing the postdoc program, he was employed by the funding company and later by the university as a part-time professor. ZX also conducted a postdoc position with his doctoral supervisor. During the course of the postdoc program, he actively looked for jobs and was hired by an engineering consulting company.

Three study respondents started **entrepreneurial business while still working on their graduate programs** (DF, UI, TY). UI co-founded a start-up with a friend in his home country and developed the company to a successful business. Right after completing an MBA, DF co-founded a company with his friend, also an immigrant from his home country, that soon became a success with seventy-five employees and multi-million contracts. The idea of a business was born while he was still a student. After completing his MBA, TY became a co-founder of a company that grew from two to twenty-two employees. In two of the cases (DF, TY), the respondents combined their engineering undergraduate degrees with management education and an MBA program, which might have led to their successful development of businesses.

Impacts of Respondents on Higher Education and the Engineering Profession

While the respondents developed their knowledge, skills and opportunities through postgraduate programs in Canada, they also helped expand knowledge and practices in engineering in Canada. Some contributed to the production of research papers, engineering codes and models as well as patents. Some also contributed directly to teaching practices in higher institutions.

Papers, codes, models, and patents. Several respondents published research-based papers in journals and conference proceedings (WS, JK, ZX, BN, QW, UI). For example, ER published a publicly accessible report based on her capstone project. Several organizations, manufacturers and the City of Vancouver took interest in her research, particularly the equipment that she tested and approached her to learn more about it. WS's data collected for his thesis has

been taken up and indeed used by a large company. By the time of the interviews, QW had published fourteen journal papers and seventeen conference papers. BN published two papers based on his thesis research that suggested a new solution to constructing wooden buildings and potentially provided data for developing new standards in this industrial area. He said:

“For solid wood design, we definitely need to improve Canadian standards. So, my research could provide good data for those guys who are going to develop the standard for wood design.” (BN)

CV developed a model and simulation software for the use in the public utility systems. She said:

“The mathematic model and then eventually the software application merged into another, a very broad [utility] system [...] analysis software. So, my model eventually became part of it. There is big marketing today, across North America for the power utility that purchases this [...] software and uses it for power system [...] analysis. And my work is part of it.” (CV)

In the case of ZX, he is the owner of five patents, two of which are based on his PhD dissertation and are used worldwide. But because patent application took time, his thesis was on hold for two years. As a result, he could not disclose his patents while looking for jobs. While doing his master’s degree program, JK completed a project that involved gathering data internationally to inform the building of a power backup control center. He said:

“We sent out questionnaires to South Africa, Argentina, Norway, the United States, Canada, and New Zealand. ...Based on that survey, there were some details we developed and out of that, we put forward recommendations for [a power control authority]. ...this was one of the inputs [the authority] wanted to embed into that planning stage to make an informed decision.” (JK)

Some of the respondents also directly contributed to the **teaching practices in higher education**. UI and QW returned to universities as university professors. They brought with them unique knowledge of the educational systems from outside of Canada. Reflecting on his experience as an undergraduate and postgraduate student in his home country, QW suggested that the engineering education in his home country is of high quality:

“...even if you just go from the quantity, the number of courses that I had in my university specialized in power engineering was probably ten times what is being offered in any other university in Canada to the undergraduate and graduate students.” (QW)

Additionally, he pointed out that at his home university, he benefited from the involvement of expert practitioners working as associate part-time professors and from ready access to the well-

equipped laboratories with industrial machines and “not just mock-ups.” His experiences in his home country positioned him well as a part-time adjunct professor in Canada teaching a capstone course in a university, which connects students to the industry through small-group industrial projects. He was committed to teaching the course, as he fully believed in the value of it.

“So, the students work on projects that are defined by the industry – a start-up [or] a bigger company. It's a way to prepare them to work in the industry framework as a team. [They] learn some other skills like teamwork skill, and people skill, and presentation skill.” (QW)

In the case of QA from Taiwan, he related that he was able to strengthen the teaching and learning about seismic design in the institute that he attended. He said:

“So because of my background in Taiwan, ... a strongly seismic area, ... [my] seismic knowledge is super strong. I'm pretty confident that most of the ... people from Taiwan have more background in earthquake designing, especially about the engineering part than most of the Canadian engineers.... So I remember ... when the professor [was] talking about the seismic things, I kind of assist[ed] him a lot. Also, I shared some of my lectures from Taiwan with my classmates, so they have a better understanding about how lateral system ... is developed and why we need to apply these factors to the building, to the designing process.” (QA)

Enabling Features of Postgraduate Programs

The key question asked in the study is what about the postgraduate programs that the respondents benefited from the most? Among all program features that people mentioned, **co-op programs, capstone projects, research projects, industrial placements and internships were identified as most beneficial.** These features helped respondents connect not only with the industry but sometimes also directly with employers and job positions. For instance, GH found her first temporary employment based on her capstone project and her second employment based on her coop experience. ER's capstone project led to her employment in policymaking and research. QW's PhD and postdoc projects were industry-based and funded and led to his employment with the same employer. Part of the master's program that AS was enrolled in was a summer co-op experience, which led her to a full-time position at the company where she was placed:

“...while I was doing that program, we had to do a co-op as a part of the program. It was a co-op during the summer. So I did my co-op and then the company I was working for as a co-op wanted to extend my co-op for eight months. I stayed there for eight months and

then after that they said they want me to be there ... full time. So I'm still working there.” (AS).

TY used the time studying on the master’s program to gain a specialization in engineering management, believing that this specialization would better equip him for the job market. This interest in management resulted in completing an MBA, becoming a CEO and a later a co-founder of a company.

The programs the respondents attended provided connections to the industrial sectors either through supervisors, courses or industrial projects. Respondents reported that they benefited from supervisors’ relationship with industrial partners as well as supervisor’s research network and connection to other professors (BN, CV, WS), and the networks of other professors from the same universities (DF, JK). In particular, the collaborations and partnerships that supervisors have with the industry shaped the research problems, research questions and research objects that the respondents tackled during their postgraduate programs, as well as the research process, place and placement, team, resources, tools and technologies they were able to access. Supervisors were the ones who dissected industrial problems into questions appropriate for student degree projects at different levels and with different capacities (ER, JK, CV, BN, WS). Many identified their supervisors as nodal points for the development of professional networks which then opened access to the broader research communities in Canada and globally (BN, ER, CV). Below, BN related how she benefited from her involvement in industrial projects:

“I was involved in a few industrial projects..., which was really, really good for me. ...If you are working on research you have two options: just going through theoretical procedures or doing some experiments. So, I had both of them, I had the chance to read the articles, to connect with people who know about that research. And also I was able to do experiments. When my professor was working with industrial companies, I was able to get actual experience, because when I was talking with two engineers who were in cooperation with our university, I was able to get actual experiences from them and it really helped me....If you're talking with industrial guys, they have their...views, because they were working for a long time in the industry. And they know what kind of issues you will face or, what kind of solutions you need to solve the issues. But I don't want to say it's enough because you need to take some academic courses to know about the principles, fundamentals too.” (BN)

What needs to be noted is that some respondents also sought funding opportunities to finance their postgraduate programs. Available funds included research funding, teaching assistance, and other fellowship and scholarship provided through industry sponsorship, and the Natural

Sciences and Engineering Research Council (NSERC). Seven respondents' study and research projects were sponsored by industrial funding or industrial partner scholarship through NSERC. In a few cases, it was the funding opportunity that determined the respondents' specific choice of program and university.

Three respondents explicitly expressed that they appreciated the diverse teams in which they were involved, through which they were exposed to diverse expertise and backgrounds (WS, QA, BN, CV). For instance, QA worked as a research assistant during his master's program. As a research assistant working with a team organized by his professor, he said:

“There were people from ... Alberta, ... people from Iran... we are gathering our knowledge together to develop the research...there's some device in ... [searching for device on video] ... this one, is only [available] in New Zealand so people introduce this to me. I think this is a really good communication because people sharing all the information over the world and then that's how we develop our professional knowledge and also all the techniques and designing idea.” (QA)

University environment and infrastructure are also important for respondents to maximize their professional opportunities. Universities provided resources for learning, such as labs, workshop training, and information sessions. In particular, respondents who started entrepreneurial businesses mentioned that they attended workshops on entrepreneurship, built their social networks, and even applied for seed funds as they went about setting up their businesses. They also suggested that partner programs at universities such as in collaboration with MITACS were helpful in them developing soft skills and entrepreneurship. (UI, DF, TY).

Conclusion

As an increasing number of international students and mature immigrant students seek higher education to enhance their life and professional opportunities, it is time to examine the roles that higher education plays in relation to internationalization, migration and integration. In this paper, drawing on the experiences of seventeen immigrants who attended higher education in Canada to expand their career and life opportunities, we tried to understand how the respondents benefited from the program, the kind of changes that they bring to Canada in terms of knowledge and practices, and the features of postgraduate programs that have enabled the respondents to thrive as engineering professionals. The assumption of the paper is that the kinds

of impacts that immigrants bring to the profession through the postgraduate programs are an interactive effect of their personal and professional journeys as immigrants and the affordances of the programs.

The findings presented in the paper demonstrate that postgraduate programs are largely positioned as a means for the respondents to fulfil their educational and professional aspirations and immigration plans, and/or to enhance their integration into the host labour market. It is clear that the respondents have expanded their life and professional opportunities in terms of both settlement and professional employment. Some also started their own business while studying. In the meantime, they have also contributed to their respective fields of practices with research papers, models, innovations, patents, and related areas of teaching and engineering practices. The study also shows that close industry and university connections and programs, and the wide range of university resources and infrastructures all enable the respondents to succeed and thrive in and beyond higher education. Faculty members, particularly supervisors, are reported to be the nodal points for the respondents to navigate specialized areas of knowledge and to grow connections with the industrial world both in terms of practices and social networks.

It must be mentioned that the study draws on the experiences of an elite group of engineering professionals who have either been profiled in professional media or identified/nominated as someone who have contributed to the engineering profession in Canada. Also, not all respondents in the study were completely satisfied with the postgraduate programs they attended. Some of them ventured out of their degree programs to pick up another specialization that they believed to be marketable (AS). Despite these limitations, the study is still informative. For one, it shows that people with migratory backgrounds are not merely positioned to learn and unilaterally integrate into the Canadian society but have a wealth of knowledge and experiences to impart. Second, it is one of few studies that has revealed ways in which migratory students have contributed to the expansion of engineering practices through postgraduate programs. Finally, it shows the features of postgraduate programs that enable program participants to thrive professionally. It is clear that opportunities need to be made available for students, particularly mature international students to participate in research projects, capstone courses, partnership programs, and other opportunities that bring together the academic and practice worlds. It is through participating in these types of activities that the respondents developed specialized knowledge, in-depth understanding of practices in the

engineering field, as well as connections within the research and industrial communities. It is also through such involvement that they brought forth their distinctiveness as migrants, and their prior learning and training to expand knowledge and practices in the engineering profession.

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