



wace
advancing cooperative &
work-integrated education

Refereed Proceedings of the 4th WACE International Research Symposium on Cooperative and Work-Integrated Education, 2022, Kanazawa Institute of Technology, Japan



New industry-university collaboration initiatives to realize a sustainable society: Contribution and expectations of co-operative & work-integrated education to Sustainable Development Goals

31st August to 2nd September, 2022, Kanazawa Institute of Technology, Japan (online)

Editors

T. Judene Pretti, Jenny Fleming, Karsten E. Zegwaard

ISBN 978-1-7386618-0-0

Front cover: Kanazawa Castle, Kanazawa, Ishikawa Prefecture, Japan

Photo credit: Kanazawa City Tourism Association

Refereed Proceedings of the 4th WACE International Research Symposium on Cooperative and Work-Integrated Education, 2022, Kanazawa Institute of Technology, Japan

Held online 31st August to 2nd September, 2022, Kanazawa Institute of Technology, Japan

Proceedings Editors

T. Judene Pretti, *University of Waterloo, Canada*

Jenny Fleming, *Auckland University of Technology, New Zealand*

Karsten E. Zegwaard, *University of Waikato, New Zealand*



The publisher grants permission and encourages authors to archive the final unaltered published proceedings in their institutional repositories, distribute directly to a third party, and on their personal websites. The authors and readers of this proceedings publication can distribute an unlimited number of printed and electronic copies of the unaltered version of this proceedings publication on the condition that it is the unaltered original version as published here and that distribution is at no commercial gain.

Published by WACE Inc, Waterloo, Canada

© 2022 WACE Inc

Available online: <http://www.waceinc.org/>

ISBN 978-1-7386618-0-0

Research Symposium Committees

Symposium Organising Committee Chair

Norah McRae, *University of Waterloo*

Symposium Organising Committee

Sachiko Fukami, *Kanazawa Institute of Technology*

Jude Kay, *WACE*

Rikichi Izumiya, *Kanazawa Institute of Technology*

Kazutaka Nihanda, *Kanazawa Institute of Technology*

T. Judene Pretti, *University of Waterloo*

Kayla Roelfsema, *University of Waterloo*

Keiko Saito-Miyakawa, *WACE Japan Office*

Editors of the Proceedings

T. Judene Pretti, *University of Waterloo*

Jenny Fleming, *Auckland University of Technology*

Karsten E. Zegwaard, *University of Waikato*

Chairs of the Review Board

T. Judene Pretti, *University of Waterloo*

Jenny Fleming, *Auckland University of Technology*

Review Board

Christine Bilsland, *Macquarie University*

Tracey Bowen, *University of Toronto*

Roelien Brink, *University of Johannesburg*

Marina Brunner, *Duale Hochschule Baden-Württemberg
Karlsruhe*

Sally Burford, *University of Canberra*

Sarah Burrows, *Suffolk University*

Michaelene Cox, *Illinois State University*

Karl Dahlquist, *University West*

Bonnie Amelia Dean, *University of Wollongong*

David Drewery, *University of Waterloo*

Michelle Eady, *University of Wollongong*

Ulf-Daniel Ehlers, *Duale Hochschule Baden-Württemberg
Karlsruhe*

Kristen Eppel, *University of Waterloo*

Anne-Marie Fannon, *University of Waterloo*

Dave Fenton, *University of Toronto*

Sonia Ferns, *Curtin University*

Johannes Haas, *FH Joanneum University of Applied Sciences*

Letitia Henville, *University of British Columbia*

Katharine Hoskyn, *Auckland University of Technology*

Shabnam (Shay) Ivkovic, *University of Waterloo*

Denise Jackson, *Edith Cowan University*

Kristina Johansson, *University West*

Judie Kay, *WACE*

Katie Knapp, *University of Waterloo*

Amita Krautloher, *Charles Sturt University*

Patricia Lucas, *Auckland University of Technology*

Andrew Martin, *Massey University*

Norah McRae, *University of Waterloo*

Yoshiki Mikami, *Kaishi Professional University*

Shinichi Miyazato, *Kanazawa Institute of Technology*

Annie Moletsane, *Vaal University of Technology*

Sachiko Morita, *Kochi University*

Karen Nulton, *Drexel University*

Kevin Oliver, *University of Manitoba*

Naoko Osada, *Ritsumeikan University*

Camilo Peña, *University of British Columbia*

Clare Power, *Charles Sturt University*

Karima Ramji, *University of Victoria*

Mabu LP Raphotle, *ETDP SETA*

Matt Rempel, *Sheridan College*

Anna Rowe, *University of New South Wales*

Andrea Sator, *Simon Fraser University*

Colin Smith, *Edinburgh Napier University*

James Stellar, *University at Albany*

Ashley Stirling, *University of Toronto*

Yasushi Tanaka, *Kyoto Sangyo University*

Anika Taylor, *University of Toronto*

Julie Walchli, *University of British Columbia*

Neil Ward, *University of Surrey*

Theresa Winchester-Seeto, *University of New South Wales*

Jennifer Woodside, *University of Waterloo*

Karsten E. Zegwaard, *University of Waikato*

All papers were independently, double-blind peer reviewed by two members of the International Review Board. All papers published in these proceedings were presented online at the 4th WACE International Research Symposiums on Cooperative and Work-Integrated Education, 2022, Kanazawa Institute of Technology, Japan.

WACE gratefully thanks the symposium sponsors

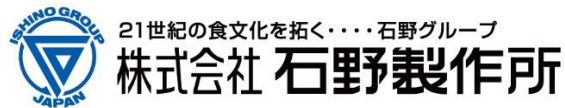
UNIVERSITY OF
WATERLOO



UNIVERSITY OF
LIMERICK
OLLSCOIL LUIMNIGH



INSTAGE



野村證券



TABLE OF CONTENTS

Navigating this document:

In the Table of Contents, hold the Ctrl button and click on the paper title to go directly to the paper location.

At the paper location, hold the Ctrl button and click on the paper title to return to the top of the Table of Contents.

Research Symposium Committees	iii
Research Symposium Sponsors	v
The benefits, challenges, and impacts of telehealth placements for accredited health programs during the COVID-19 pandemic – Project overview <i>Rachel Bacon, Sian Hopkins</i>	1
Telling the story of an interfaculty, multi-disciplinary learning-in-action work-integrated learning project within the University of Johannesburg <i>Roelien Brink, Dalien Benecke, Elton Hart</i>	7
Environment scan of work-integrated learning programmes at THENSA member institutions <i>Roelien Brink, Henri Jacobs</i>	12
Virtual agile project-based learning experiences for undergraduate software development students <i>Roelien Brink, Nazeer Joseph</i>	18
Acquisition of future skills at the workplace - new demands for professionals within high-tech industries: Results of an international study in the blockchain field <i>Marina Brunner, Ulf-Daniel Ehlers</i>	24
Workplace friendships and organizational commitment in a remote work setting <i>David Drewery, Katie Knapp</i>	31
Extending our understanding of work experience quality: The LIRN model <i>David Drewery, T. Judene Pretti, Anne-Marie Fannon</i>	37
Use of an artificial intelligence-based résumé critique product and co-operative education students' job search outcomes <i>David Drewery, Jennifer Woodside, Kristen Eppel</i>	42
Introducing the global work-integrated learning modules: Global connectivity for practitioners <i>Sonia J. Ferns, Judie Kay, Katharine Hoskyn, Karsten E. Zegwaard, Kristina Johansson, Norah McRae</i>	47
Value and impact of an internship activity to increase awareness of and engagement with the UN's SDGs <i>Shabnam Surjitsingh Ivković, Norah McRae</i>	54
Global Challenge: An innovative work-integrated learning program connecting students across the globe <i>Judie Kay, Dave Fenton, Karima Ramji, Shabnam Surjitsingh Ivković</i>	60
Improving graduate readiness through a project-based learning: Lessons from the multi-modality work-integrated learning case study <i>Knowledge Pp Manana, Annie Moletsane</i>	66
Implementation of cooperative and work-integrated education at “Professional University” in Japan: Case studies of Faculty of Information, Kaishi Professional University <i>Pann Yu Mon, Shuta Ueno, Gengo Suzuki, Naoyuki Karasawa, Keitaro Horikawa, Masahiro Nishikawa, Masahiro Awaji, Tetsuaki Isonishi</i>	72

Effects and challenges of internships as communities of practice on young people's career development: A case study of a Japanese university <i>Sachiko Morita, Seigo Nasu</i>	79
Have we met? Assessing links between academic and work learning <i>Karen Nulton, Johanna Inman, T. Judene Pretti</i>	85
Employers' perspectives on co-op student work tasks that support their employability competencies <i>Kevin Oliver, Robert Renaud</i>	90
A case study on the curriculum development for cooperative education in general education <i>Naoko Osada, Yoko Nakagawa</i>	96
Developing a framework to assess the socio-economic impacts of work-integrated learning experiences across post-secondary programs in British Columbia, Canada <i>Camilo Pena, Stephanie McKeown, Julie Walchli</i>	101
Integration of workplace learning in an engineering course to strengthen regional development <i>Karthika Krishna Pillai, Amita Krautloher</i>	109
Realising the potential of teacher education in addressing the Sustainable Development Goals <i>Clare Power</i>	115
Waterloo Experience Accelerate: Exploring a specialized work-integrated learning program and its application to support work-readiness <i>Andrea Prier, Anne-Marie Fannon, Jamieson Cox, Suman Armitage</i>	121
Meeting the technical needs of Technical, Vocational, Education and Training College lecturers through work-integrated learning <i>Mabu L.P. Raphotle</i>	127
Impacts and challenges of introducing a cooperative education program in Japan <i>Miyazato Shinichi</i>	132
The value of simulations in learning workplace skills <i>James Stellar, Nicole Mclean, Adrienne Dooley</i>	139
Supporting student well-being through remote work-integrated learning: Perspectives from program coordinators <i>Anika Taylor, Aalaya Milne, Alexia Tam, Ashley Stirling</i>	144
The best of both: Harnessing the potential of repurposing data sets in work-integrated learning research <i>Theresa Winchester-Seeto, Patricia Lucas, Anna Rowe</i>	150
The changing professional development needs of the international work-integrated learning community <i>Karsten E. Zegwaard, Sonia Ferns, Kristina Johansson, Katharine Hoskyn, Norah McRae, Judie Kay</i>	155

This document is formatted for A4 and US letter, double-sided printing

Example of citing a paper from these proceedings (APA 7th ed. style):

Bacon, R. & Hopkins, S. (2022). The benefits, challenges, and impacts of telehealth placements for accredited health programs during the COVID-19 pandemic – Project overview. In T. J. Pretti, J. Fleming, & K. E. Zegwaard (Eds.), *Refereed Proceedings of the 4th WACE International Research Symposium on Cooperative and Work-Integrated Education, 2022, Kanazawa Institute of Technology, Japan* (pp. 1-6). WACE Inc.

The benefits, challenges, and impacts of telehealth placements for accredited health programs during the COVID-19 pandemic – Project overview

RACHEL BACON

SIAN HOPKINS

University of Canberra, Canberra, Australia

BACKGROUND

Telehealth is defined by the International Organisation for Standardisation as the “use of telecommunication techniques for the purpose of providing telemedicine, medical education and health education over distance” (International Organization for Standardization, 2007). Telehealth can be provided using a variety of technologies such as telephone, videoconferencing, digital health tracking software and applications, remote medical and health education, and digital transmission of patient records and imaging (Gajarawala & Pelkowski, 2021; NEJM Catalyst, 2018).

The use of telehealth as a form of healthcare service delivery is thought to have many benefits for patients, clinicians, and students. For example, telehealth increases access to healthcare for patients who live in rural and remote areas, both by increasing the patient’s direct access to clinicians and by providing rural clinicians with access to specialist advice on treatment of the patients under their care (Mahtta et al., 2021). The use of telehealth in rural and remote areas has been shown to increase the number of patients that can be seen by a service and therefore reduce waiting times (Lillicrap et al., 2019) as well as decrease travel costs for patients (Le & Aggarwal, 2021). Other studies have demonstrated that telehealth services provide similar or improved outcomes for patients when compared to face-to-face care (Larson et al., 2017; Lunney et al., 2018). A systematic review in 2019 found improved health outcomes for patients with cardiovascular disease including decreased mortality and rehospitalisation, and lower risk markers in patients receiving telehealth care as an alternative or adjunct to face-to-face care (Jin et al., 2019). Throughout the COVID-19 pandemic, telehealth also provided a safe method of healthcare delivery for patients, clinicians, and students, as it enabled the continuation of healthcare delivery without the risk of transmission of COVID-19 from face-to-face contact (Monaghesh & Hajizadeh, 2020).

Telehealth and Work-Integrated Learning

In response to the COVID-19 pandemic, governments in Australia and worldwide implemented restrictions on movement and interaction of people to reduce the transmission of the COVID-19 virus. These restrictions included implementing social distancing, requiring the wearing of masks in public places, and restrictions on the number of people permitted within enclosed spaces (Ritchie et al., 2020). In addition, many healthcare settings were encouraged to transition to using telehealth for provision of healthcare services, and telehealth services were covered under Medicare from March 2020 to December

2021 (Australian Government Department of Health, 2021). As a result of the government restrictions and need to ensure safe services for patients and staff, many healthcare services cancelled placements for healthcare students (O'Flynn-Magee et al., 2021), while many other placements rapidly transitioned to telehealth models of placement (Park et al., 2021). Following on from the COVID-19 pandemic, telehealth is expected to become widely used in healthcare settings (Fisk et al., 2020). This may result in an increased demand for healthcare professionals proficient in the use of telehealth for healthcare service provision. It is important therefore to ensure that students have an opportunity to develop their skills in using telehealth prior to entering the workforce.

Embedding telehealth within student placement programs has allowed student placements to continue during the COVID-19 pandemic. This meant that students were still able to gain real world experience via work placement based, or work-integrated, learning without delaying their course completion and entry into the workforce. It has also afforded a unique opportunity to embed telehealth within education curricula and placement programs, giving students the opportunity to learn to use telehealth, providing them with an additional and potentially valuable set of skills.

Telehealth and Inter-Professional Education

Interprofessional collaboration has been shown to improve outcomes for patients (Coleman et al., 2017; Moffet et al., 2015) and may therefore be considered an essential skill for emerging healthcare practitioners. In addition to providing a safe environment for patients, clinicians, and students, telehealth may also provide an opportunity for healthcare professionals to collaborate to improve patient outcomes. For example, healthcare practitioners may use telehealth to access advice from specialists on the care of their patients, or to work closely with clinicians from different disciplines for a collaborative approach to patient care.

Many educational settings are requiring that students develop competencies in IPE. However, very little research has been conducted that considers whether the benefits of IPE translate into a telehealth context. Given the many reported benefits of both IPE and telehealth within WIL experiences, it is important to gain a better understanding of how these can be combined to improve student learning as well as patient outcomes.

Challenges of Telehealth, Inter-Professional Education, and Work-Integrated Learning

Despite the many benefits of including telehealth within WIL programs, the rapid introduction of telehealth in the context of COVID-19 has highlighted many of the challenges associated with telehealth, IPE, and WIL. For example, a lack of resources and training materials meant that many facilities needed to produce their own resources as part of the rollout of telehealth in response to the COVID-19 pandemic (Phan et al., 2020). Many resources that existed for telehealth were discipline-specific, or intended for specific settings, limiting their transferability to other disciplines or settings.

The projects outlined in this report respond to these gaps in the literature and the need for resources to adequately prepare clinicians, educators, students, and patients for telehealth consultations.

Aims of the Project

1. To determine the difference, if any, between WIL in Telehealth or face-to-face service delivery models within accredited health placements.
2. To explore the perceived benefits, challenges and impacts of WIL in telehealth placements for key stakeholders.
3. To conduct a systematic literature review on the use of telehealth in IPE and accredited allied health placements.
4. To develop guidelines and a suite of practical resources to optimise telehealth's role in WIL.

METHODS OVERVIEW

Research Design

This research is consistent with a pragmatist framework where knowledge and ideas are acquired for the purpose of solving practice-based problems as they arrive in life. As such it is the research questions that have determined the methods selected. This research uses a mixed method approach incorporating three studies allowing for a more comprehensive multi-faceted examination of the topic.

Research Setting

This research was conducted within an established university allied health clinic located within a multi-purpose Health Hub. In 2020, when the research study commenced, the clinic was providing placement to 240 students annually. In 2021, this has doubled, with the clinic providing 500 placements across 10 disciplines. In addition to discipline specific services, interprofessional services are provided through the Parkinson's clinic and paediatric feeding clinic and Cancer Wellness Centre. Telehealth services were introduced at both settings as a consequence of the pandemic from March 2020, with students and clinical educators providing these telehealth services on site.

Study 1

Students from exercise physiology, nutrition and dietetics, occupational therapy, physiotherapy, and speech pathology who completed their placements at the university clinic between March and December 2020 participated in a telephone survey. Learning experiences of telehealth and face-to-face consultations were rated on a purpose-built instrument using a 5-point Likert scale. Open comments were analysed thematically.

Study 2

Stakeholder experiences with telehealth placements, undertaken within the university clinic, were explored in virtual focus groups held between November 2020 and March 2021. These discussions used semi-structured interview questions, were audiotaped and transcribed verbatim. They were then thematically analysed independently by two researchers, then cross-checked for consistency, using a qualitative descriptive approach, with reflexivity applied.

Study 3

A systematic review of studies involving allied health students engaged in telehealth IPE was conducted. Studies were included where there was one or more allied health student in interprofessional student teams, and where at least one student in the interprofessional team provided care to a real or simulated patient through telehealth. The Interprofessional Education Collaborative (IPEC) competencies were used as a framework for data extraction. Quality appraisal was conducted using the McGill Mixed Methods Appraisal Tool (MMAT).

PRELIMINARY FINDINGS

Study 1

Of n=151 eligible students, n=67 (44.3%) consented to participate. Forty-nine (32.5%) of these students met the inclusion criteria having completed both telehealth and face-to-face consultations. For nine of the statements, 77.1% positively rated their experience of telehealth, and 91.7% positively rated their experiences of face-to-face. Regarding their opportunities to “work in a multidisciplinary team”, students had significantly more opportunities when conducting face-to-face consultations (73.5% agree/strongly agree, 12.2% disagree/strongly disagree) compared to telehealth (26.5% agree/strongly agree, 49.0% disagree/strongly disagree; $p=0.003$). Four themes emerged from the open comments: (1) skills/competency development; (2) telehealth placement quality; and (3) barriers and (4) enablers of positive telehealth experiences. Students reported significantly higher satisfaction with the face-to-face experiences ($p<0.05$).

Study 2

Twenty-six stakeholders from six allied health disciplines participated in seven homogeneous focus groups. Three themes were identified: (1) telehealth placements support competency development and graduate employability; (2) telehealth placements enable students to provide person centred-care; and (3) telehealth placements enabled innovation.

Study 3

Of 341 studies screened, six were included, where IPE was delivered using telehealth and addressed the IPEC competencies. However, the generalisation of the findings is limited by poor methodological quality (MMAT scores 20-60%) and heterogeneity. The publications included in this review are predominantly pilot studies that describe the development, implementation, and evaluation of telehealth IPE. Students found service delivery challenging via telehealth due to technical issues and lack of preparedness for telehealth practice.

CONCLUSIONS AND RESOURCES

Overall, students had a positive experience of telehealth on placement at the university clinic. The findings demonstrated how telehealth placements can benefit student competency development with telehealth placements offering distinct advantages to student learning outcomes such as employability skills developing and modelling person-centred care. Moving forward, consideration should be given to barriers such as technological issues and lack of telehealth in university curricula to ensure a positive

learning experience on telehealth placements. Multidisciplinary opportunities should also be given additional focus in telehealth placement programs. While the generalisation of the findings is limited, the systematic review demonstrates the potential opportunities for telehealth IPE. Further research to demonstrate the impact of telehealth on student interprofessional learning is needed.

Telehealth Resources

A full collection of resources produced as part of this project is collated into a single webpage here: [Work-Integrated Learning and Telehealth: A guide to the inclusion of Telehealth within Work-Integrated Learning placement settings](#). This allows for the full collection to be easily shared as a resource for educators considering the inclusion of telehealth within WIL.

FUNDING

The project was funded by an Australian Collaborative Education Network 2020 Research Grant. This paper is based on the final report of this project that has already been submitted to ACEN.

ACKNOWLEDGEMENTS

This paper although written by the above authors reports on the work on the research team which also includes: Nick Brown, Jane Kellett, Linda Smillie, Melanie Moore, Jacqui Etherington, Cate Hilly, Irmina Nahon, Allyson Flynn, Luise Hollmann, Rebecca Sutherland and Carajane Millar from University of Canberra, Australia, Sarah Chapman and Rowan McIntrye from Canberra Health Services, Australia, Karlee Johnston from Australian National University, Australia, and Ekavi Georgousopoulou ACT Health Directorate, ACT Government, Australia

REFERENCES

- Australian Government Department of Health. (2021). Providing health care remotely during COVID-19. Australian Government Department of Health. Retrieved November 23 from <https://www.health.gov.au/news/health-alerts/novel-coronavirus-2019-ncov-health-alert/coronavirus-covid-19-advice-for-the-health-and-disability-sector/providing-health-care-remotely-during-covid-19>
- Coleman, M. T., McLean, A., Williams, L., & Hasan, K. (2017). Improvement in interprofessional student learning and patient outcomes. *Journal of Interprofessional Education & Practice*, 8, 28-33. <https://doi.org/https://doi.org/10.1016/j.xjep.2017.05.003>
- Fisk, M., Livingstone, A., & Pit, S. W. (2020). Telehealth in the Context of COVID-19: Changing Perspectives in Australia, the United Kingdom, and the United States [Original Paper]. *Journal of Medical Internet Research*, 22(6), e19264. <https://doi.org/10.2196/19264>
- Gajarawala, S. N., & Pelkowski, J. N. (2021). Telehealth Benefits and Barriers. *The journal for nurse practitioners: JNP*, 17(2), 218-221. <https://doi.org/10.1016/j.nurpra.2020.09.013>
- International Organization for Standardization. (2007). Interoperability of telehealth systems and networks Part 2: Real-time systems.
- Jin, K., Khonsari, S., Gallagher, R., Gallagher, P., Clark, A. M., Freedman, B., Briffa, T., Bauman, A., Redfern, J., & Neubeck, L. (2019). Telehealth interventions for the secondary prevention of coronary heart disease: A systematic review and meta-analysis. *European Journal of Cardiovascular Nursing*, 18(4), 260-271. <https://doi.org/10.1177/1474515119826510>
- Larson, J. L., Rosen, A. B., & Wilson, F. A. (2017). The Effect of Telehealth Interventions on Quality of Life of Cancer Patients: A Systematic Review and Meta-Analysis. *Telemedicine and e-Health*, 24(6), 397-405. <https://doi.org/10.1089/tmj.2017.0112>
- Le, S., & Aggarwal, A. (2021). The application of telehealth to remote and rural Australians with chronic neurological conditions. *Internal Medicine Journal*, 51(7), 1043-1048. <https://doi.org/https://doi.org/10.1111/imj.14841>
- Lillicrap, L., Hunter, C., & Goldswain, P. (2019). Improving geriatric care and reducing hospitalisations in regional and remote areas: The benefits of telehealth. *Journal of Telemedicine and Telecare*, 27(7), 397-408. <https://doi.org/10.1177/1357633X19881588>

- Lunney, M., Lee, R., Tang, K., Wiebe, N., Bello, A. K., Thomas, C., Rabi, D., Tonelli, M., & James, M. T. (2018). Impact of Telehealth Interventions on Processes and Quality of Care for Patients With ESRD. *American Journal of Kidney Diseases*, 72(4), 592-600. <https://doi.org/10.1053/j.ajkd.2018.02.353>
- Mahtta, D., Daher, M., Lee, M. T., Sayani, S., Shishehbor, M., & Virani, S. S. (2021). Promise and Perils of Telehealth in the Current Era. *Current Cardiology Reports*, 23(9), 115. <https://doi.org/10.1007/s11886-021-01544-w>
- Moffet, H., Tousignant, M., Nadeau, S., Mérette, C., Boissy, P., Corriveau, H., Marquis, F., Cabana, F., Ranger, P., Belzile É, L., & Dimentberg, R. (2015). In-Home Telerehabilitation Compared with Face-to-Face Rehabilitation After Total Knee Arthroplasty: A Noninferiority Randomized Controlled Trial. *Journal of Bone and Joint Surgery, American Volume*, 97(14), 1129-1141. <https://doi.org/10.2106/jbjs.N.01066>
- Monaghesh, E., & Hajizadeh, A. (2020). The role of telehealth during COVID-19 outbreak: a systematic review based on current evidence. *BMC Public Health*, 20(1), 1193. <https://doi.org/10.1186/s12889-020-09301-4>
- NEJM Catalyst. (2018). What Is Telehealth? Retrieved 2021, from <https://catalyst.nejm.org/doi/full/10.1056/CAT.18.0268>
- O'Flynn-Magee, K., Hall, W., Segaric, C., & Peart, J. (2021). GUEST EDITORIAL: The impact of Covid-19 on clinical practice hours in pre-licensure registered nurse programs. *Teaching and learning in nursing: official journal of the National Organization for Associate Degree Nursing*, 16(1), 3-4. <https://doi.org/10.1016/j.teln.2020.07.007>
- Park, H., Shim, S., & Lee, Y.-M. (2021). A scoping review on adaptations of clinical education for medical students during COVID-19. *Primary Care Diabetes*, 15(6), 958-976. <https://doi.org/10.1016/j.pcd.2021.09.004>
- Phan, R. C. V., Van Le, D., Nguyen, A., & Mader, K. (2020). Rapid Adoption of Telehealth at an Interprofessional Student-Run Free Clinic. *PRiMER (Leawood, Kan.)*, 4, 23-23. <https://doi.org/10.22454/PRiMER.2020.241619>
- Ritchie, H., Mathieu, E., Rodés-Guirao, L., Appel, C., Giattino, C., Ortiz-Ospina, E., Hasell, J., Macdonald, B., Beltekian, D., & Roser, M. (2020). Coronavirus Pandemic (COVID-19) <https://ourworldindata.org/coronavirus>

Telling the story of an interfaculty, multi-disciplinary learning-in-action work-integrated learning project within the University of Johannesburg

ROELIEN BRINK
DALIEN BENECKE
ELTON HART

University of Johannesburg, Johannesburg, South Africa

INTRODUCTION AND BACKGROUND

The purpose of this project was to create a multi-disciplinary virtual platform to enable students, various industries, and the University of Johannesburg (UJ) to form partnerships and collaborate on various learning-in-action projects. Due to the challenges experienced by Higher Education Institutions (HEI) and lecturers worldwide, namely, to present online lectures during Covid-19 lockdown, greatly affected student interaction with various stakeholders during their work-integrated learning (WIL) modules (Marais, 2021). During pre-Covid-19 times students had access to other students on campus, were able to meet with various industry leaders in-person, meet mentors at different organisations, as well as share with lecturers their unique experiences. Given the diversity of our student body at UJ as well as the drastic reduction in placement opportunities for specifically Public Relations (PR) students, lecturers had to be innovative. Lecturers brainstormed various alternatives and decided on a simulated, problem-based learning approach in the form of a storytelling project. This storytelling project gave the students the opportunity to work together, during online sessions, across three different faculties and helping each other to gain the necessary skills and experience for their future careers. Students needed to execute the storytelling project within multi-disciplinary groups all contributing their unique input and disciplinary knowledge from an Applied Law Services, Strategic Communication, and Applied Information systems perspective.

Telling stories, may it be of an organization, a brand, an event and/or personal experience, is one of the key functions of a Public Relations and Strategic Communication professional. Students often find it difficult to learn reflectively from their own experiences or reflect the value of their own experiences to their career success (Mules, 2018). Storytelling benefits adult learners and students as it presents them with the opportunity to “say who they are and what they think” (Caminotti & Gray, 2012). Storytelling does not only immerse the student in the moment and context but also provide the opportunity to develop language skills, demonstrate difficult social problems, and provide mutually beneficial meaning-making opportunities.

This storytelling project involved senior Public Relations (PR), Applied Information Systems (AIS) and Applied Law (AL) students in phase one of the project. PR students were prepared for the storytelling project as it is a credit bearing assessment activity for their work-integrated learning module. The theory

of storytelling, how to reflect on personal experiences, different writing styles and editing as well as were some of the topics students were exposed to in preparation for writing their own stories.

An AIS group of students prepared the various digital platforms for the PR students to publish their stories on. The design of the digital platform formed part of a credit bearing assessment for the AIS students. The AIS students are doing a subject called Development Software 3B and the purpose of this module is to apply the relevant knowledge acquired throughout the qualification to produce a complete software application that meets industry requirements. The AL students provided legal counsel to PR and AIS students on various legal aspects involved in a project of this nature. Legal issues such as copyright, consent for use of visual material and Protection of Personal Information Act (POPIA) were some of the legal topics AL students counselled PR and AIS students on.

PR students (around 230) were divided into groups, representing various geographical areas due to the online teaching model followed during the first semester of 2021, as a result of lockdown restrictions. Students were presented with specific topics and were expected to produce short videos and short which reflective stories of their own experiences. The topics were aligned with Brand South Africa's theme of "Play your part to bring about change". This phase took place during the first term (Feb to March 2021) with the first stories already uploaded on the developed sites by end March 2021. Students selected topic highlighting their student experiences, challenges they faced in gaining experience, financial challenges to fund their studies and the effects of crime in their local communities. These contextual influencers introduced group members to the lived realities of their fellow students and inspired several stories of hope, thus demonstrating how they each could play a part in the communities they are involved with. This approach was important to develop their writing skills, enhanced their confidence and ensured that they stayed within legal boundaries.

This phase served as a pilot for the next phase of the project which was launched in April 2021.

During the second phase of the project; PR students were briefed on a wider range of topics, namely, to tell the stories of local heroes within various community projects, businesses, formal social structures such as churches or micro/nano-influencers. The AL students and their legal counsel was important in this phase to ensure that Protection of Personal Information (POPI) Act, copyright regulations and digital privacy were followed. The AIS students again assisted with the digital platforms for these stories and completed their first pilot projects by end of August 2021. After the pilot project, AIS students worked with the PR students to finalise the digital platforms and present the final product at their Annual Project day which was held in October 2021.

The stakeholders in this project are depicted in table 1.

TABLE 1: Stakeholders and their roles

Brand South Africa	External partner providing the themes, brand support and collaboration opportunities.
UJ Faculties : Humanities, Law and College of Business and Economics	Providing their students the opportunity to collaborate across disciplines, learn from other students, tell their own and others' stories, provide local examples of lived experiences of ordinary citizen and build their personal brands and networks.
Public Relations Institute of Southern Africa (PRISA)	The Professional body offering support and collaboration to the project, especially with the launch.

LITERATURE REVIEW

As educators and facilitators, lecturers have their own stories to tell of their active involvement and personal experiences when involved with collaborative projects. During Covid-19 and its lockdown restrictions, lecturers were not only faced with having to improve their own digital communication skills but also had to ensure that their students meet the learning outcomes required for their qualifications. Being challenged to find alternative pedagogical approaches and drawing on each other's disciplinary knowledge and skills, resulted in a multi-disciplinary, collaborative practice. A shared philosophy by all three lecturers involved is to care for students, their learning, and prepare students for their future careers.

Due to COVID-19 restrictions, lecturers involved in this project had to find innovative ways to ensure that students meet the various learning outcomes set for the different modules, ensure that students and lecturers alike develop their networking and collaborative learning opportunities and incorporate their own experiences within their different and diverse geographical contexts (Simamora, et al., 2020). Storytelling provided an opportunity to student and lecturer alike to capture unique experiences and forced everyone to continuously reflect on practices and outcomes.

Reflecting on the regular meetings, the content and style of various collaborative approaches, the module specific coordination required from each lecturer and the impact on student and communities contribute to the immense value of such projects.

METHODOLOGY

A single case study approach was adopted in this paper. For the purpose of this paper, a qualitative method was implemented in the form of reflective observations by the three lecturers from the mentioned faculties. This provided a comprehensive overview of the experience of the lecturers during the process of this inter-faculty multi-disciplinary project. A case study approach acts as a motivational, real-life scenario; requires active involvement; develop interactive relationships; ensures the incorporation of concepts, issues, practices and procedures (Caminotti & Gray, 2012).

FINDINGS

In this section the impact of this first inter faculty multi-disciplinary project will be discussed.

The impact for this project was that the students did not only apply their knowledge of their subject/s within their project/s and their discipline but also work with students in the other mentioned disciplines. Students were expected to apply their local knowledge and experience to their academic content which is a very important aspect in decolonized curricula. This was evident from the diverse amount of stories and the richness of the local experiences they demonstrated in their stories.

This inter faculty multi-disciplinary learning-in-action project also had an impact on the community because the students from these disciplines documented case study material, determined community needs, developed and or strengthen local communication networks. As lecturers we observed different impacts, namely, on students, UJ (ourselves), industry and the communities.

The Impact for the Students:

- The impact of this study was not only to the advantage a students' academic performance but have a major impact on the quality of student provided to industry after the completion of their studies.
- Industry Stakeholder engagement was on a national level.
- Through this learning-to-be virtual platform the students were able to brand themselves.
- Various industry partners, both nationally and internationally are now able to see the work done by the UJ students.
- Case studies of the project were done and made available on virtual platforms to assist UJ students.

The Impact for UJ was as Follows:

- UJ became the first university globally with such a project.
- Reflective learning material/evidence is now available to all UJ students from first to final year.
- The lecturer reflections are available to demonstrate innovative ways to prepare students for the future world of work.
- UJ can now further enhance their presence and influence in local communities through their active involvement in addressing local issues.

The Impact for Industry was as Follows:

- Several industries (Law; IT; Public Relations) are now able to use the platform to recruit students for placement.
- Alumni can now be involved in the mentorship of students.
- Industry partners can act as judges in the assessment of the students' projects.

The Impact on the Community was as Follows:

- Communities can benefit from UJ knowledge and skills directly and indirectly through the networks that were developed.
- Communities can create awareness of local challenges via the students and the virtual platform.
- Communities contributed to nation building by telling their stories and their local solutions to problems.

CONCLUSION

This inter-faculty, multi-disciplinary project equipped our students with valuable skills in this ever-evolving digital realm we find ourselves. Courts are going digital and we need to capacitate our students with the necessary skills to use technology efficiently. It helped with overcoming spatial barriers and various other constraints that sometimes limit students' access to valuable Learning-to Be opportunities. For example, we know that only a few students can represent the University at Moot Court Competitions while with the virtual reality most of the students were able to attend from the comfort of their homes, residences etc.

Public Relations students were able to develop interviewing and storytelling skills while demonstrating their own understanding of local communities. They were also able to develop strategic communication knowledge and skills in that they developed strategies that are relevant, solution focused and measurable. They further benefitted from the multi-disciplinary learning which happened within the teams. They were able to develop and further their own networks in their respective groups and in their communities and with different local structures and or leaders.

The AIS students in return acquired communication knowledge and skills from PR students and developed their understanding of various legal requirements such as the application of the POPI Act in IT and business. External partners involved with the project included the Public Relations Institute of Southern Africa (PRISA) and Brand South Africa, providing awareness of national initiatives and organisations who may need the services of skilled AIS students.

This inter faculty multi-disciplinary project make the content of programmes more practical for students as they learned by doing. It also assisted with learning of difficult concepts through experiential learning and finally, gave the students the opportunity to learn in a multi-disciplinary world.

REFERENCES

- Caminotti, E., & Gray, J. (2012). The effectiveness of storytelling on adult learning. *Journal of Workplace Learning*, 24 (6). Pp 430-438.
- Marais, E. (2021). A journey through digital storytelling during COVID-19: Students' preparedness to use technology for learning in the language classroom. *Research in Social Sciences and Technology*, 6(2), 169-182.
<https://doi.org/10.46303/ressat.2021.17>
- Mules, P. (2018). Reflections on the absence of formal reflection in public relations education and practice. *Public Relations Review*, 44. Pp 174-179.
- Simamora, R. M., de Fretes, D., Purba, E. D., & Pasaribu, D. (2020). Practices, Challenges, and Prospects of Online Learning during Covid-19 Pandemic in Higher Education: Lecturer Perspectives. *Studies in Learning and Teaching*, 1(3), 185-208.
<https://doi.org/10.46627/silet.v1i3.45>

Environment scan of work-integrated learning programmes at THENSA member institutions

ROELIEN BRINK

University of Johannesburg, Johannesburg, South Africa

HENRI JACOBS

Central University of Technology, Bloemfontein, South Africa

INTRODUCTION AND BACKGROUND

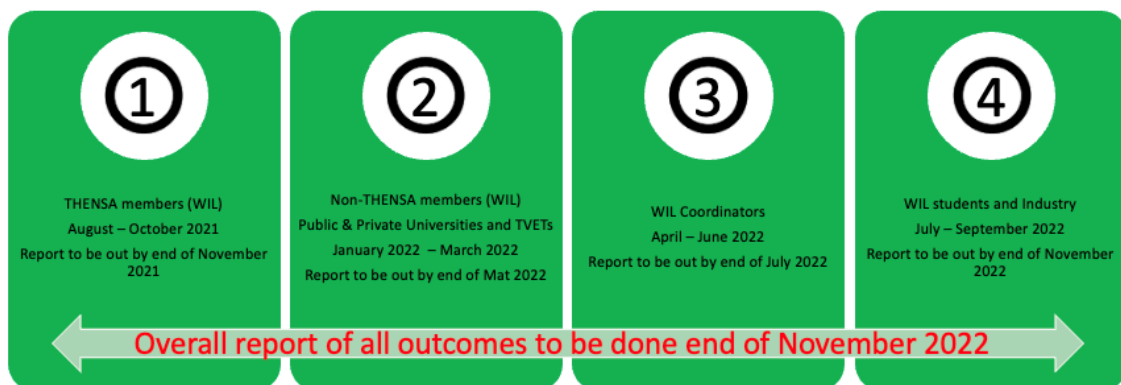
The importance of Cooperative and Work-integrated Education (CWIE) is internationally and nationally based on its critical importance for the enhancement of employability. Within the South African context Work-integrated learning (WIL) is the term more commonly used. As opposed to CWIE it comprises five modalities namely, Work-based learning (WBL), Project-based learning (PjBL), Problem-based learning (PBL), Work-directed theoretical learning (WDTL) and Simulations (S). The significance of WIL in South Africa is underpinned by the creation of a Directorate for Work-integrated learning (WIL) by the Department of Higher Education and Training (DHET) and that it also features prominently in the White Paper for Post School Education and Training (2013).

For South Africa to compete in the global economy, our university graduates need to be career ready. This means they need to be flexible, adaptive and able to apply their technical skills to real-world situations. To support the acquisition of these skills, universities offer a broad range of opportunities for students to engage with the workplace while they undertake their programmes. Universities therefore partner with employers to offer students internships, projects, simulations, fieldwork and other activities to produce the highly skilled workforce that the community and industry needs. Employers are also increasing and strengthening their links with universities through work placements and project work, which demonstrates that they are recognising the many benefits of WIL. WIL thus includes a range of practical experiences, within the context of the five WIL modalities indicated, to give students valuable exposure to work related activities relevant to their course of study.

Many of our career-focussed and technology focussed higher education programs, in the traditional universities, comprehensive universities and universities of technology (UoTs), include some form of workplace learning, in the form of industrial placements, job-shadowing, professional practice to support a professional qualification, traditional “sandwich” courses, specific skills training in particular professions, the theoretical application of practical experience in part-time professional courses and employer- or employment-based schemes, such as learnerships (Engel-Hills, Garraway, Jacobs, Volbrecht, & Winberg, June 2010). UoTs have for developmental and educational reasons also placed an increased emphasis on the need to integrate WIL into their curricula and teaching and learning strategies in general.

WPBL is historically the WIL modality almost exclusively used in South Africa. There has recently been a tendency noted by DHET that the other WIL modalities are being preferred to WPL. DHET therefore approached the South African Council for Higher Education to determine the status of the WPBL modality in particular and WIL in general in the higher education sector. It is against this background that the Technological Higher Education Network South Africa (THENSA) was approached by the CHE to undertake a national survey of WIL activities to determine the status of WIL amongst all Higher Education Institutions in South Africa. The approached decided on was to do an environmental scan consisting of four phases. The four phases are depicted in Figure 1 below.

FIGURE 1: Four Phases of the WIL Environmental Scan project.



The first phase of the environmental scan was completed at THENSA member institutions. The reasons for selecting THENSA members only for the first phase were that WIL is more prevalent at these universities and also more convenient to do the survey with to establish the prevalence of WIL in qualifications. It was decided to also include the WIL challenges experienced by institutions in order to offer solutions for the improvement of WIL to ensure that our students are work ready and WIL staff suitably qualified. This paper will discuss the findings of the first phase.

PRELIMINARY LITERATURE

A diverse range of terms have developed, that are sometimes used interchangeably, to refer to WIL as indicated in the introduction of this paper. It is therefore described as a chameleon term by Orrell (2011:5) which suggests that WIL is multi-faceted in approach and application and thus also in what it delivers.

In this vein, South Africa’s Council on Higher Education’s Good Practice Guide for WIL, distinguishes WIL from more narrow conceptions of learning-for-work through an emphasis on the integrative aspects of such learning (Winberg, Engel-Hills, Garraway, & Jacobs, 2011). WIL is therefore regarded as a curriculum matter and includes a whole range of educationally driven modalities such as work based learning, problem-based learning, project-based learning, work-directed theoretical learning, and simulated learning within the South African context.

In addition, the importance of this WIL scan for South Africa is accentuated by Gamble, Patrick, and Peach (2010) who determined that WIL can help students develop self-management, conceptual, and

analytical skills, personal and professional effectiveness, communication and problem-solving skills, as well as workplace flexibility. It is because of this potential that students who have participated in WIL programmes that are sought after in South Africa by industry and business. This is supported by the results of the doctoral study of Jacobs (2015) wherein empirical evidence is presented that employers are twice as likely to employ students who have completed WIL (work-based learning) as opposed to their non-WIL counterparts.

METHODOLOGY:

A quantitative approach was adopted in this paper. A quantitative method was implemented in the form of a questionnaire. The aim of the first phase of this Environmental Scan was to determine the current state of the WIL environment within the THENSA membership namely, Cape Peninsula University of Technology (CPUT), Central University of Technology, Free State (CUT), Durban University of Technology (DUT), Mangosuthu University of Technology (MUT), Tshwane University of Technology (TUT), University of Mpumalanga (UMP), Vaal University of Technology (VUT), Walter Sisulu University (WSU) and Namibia University of Science and Technology (NUST). A Questionnaire was distributed to all THENSA members, and 293 participants completed the questionnaire from the mentioned members. The distribution was done by email and addressed to the WIL Directors/Managers at the universities with a request to coordinate the completion of a questionnaire in the faculties per programme containing a WIL component/modality.

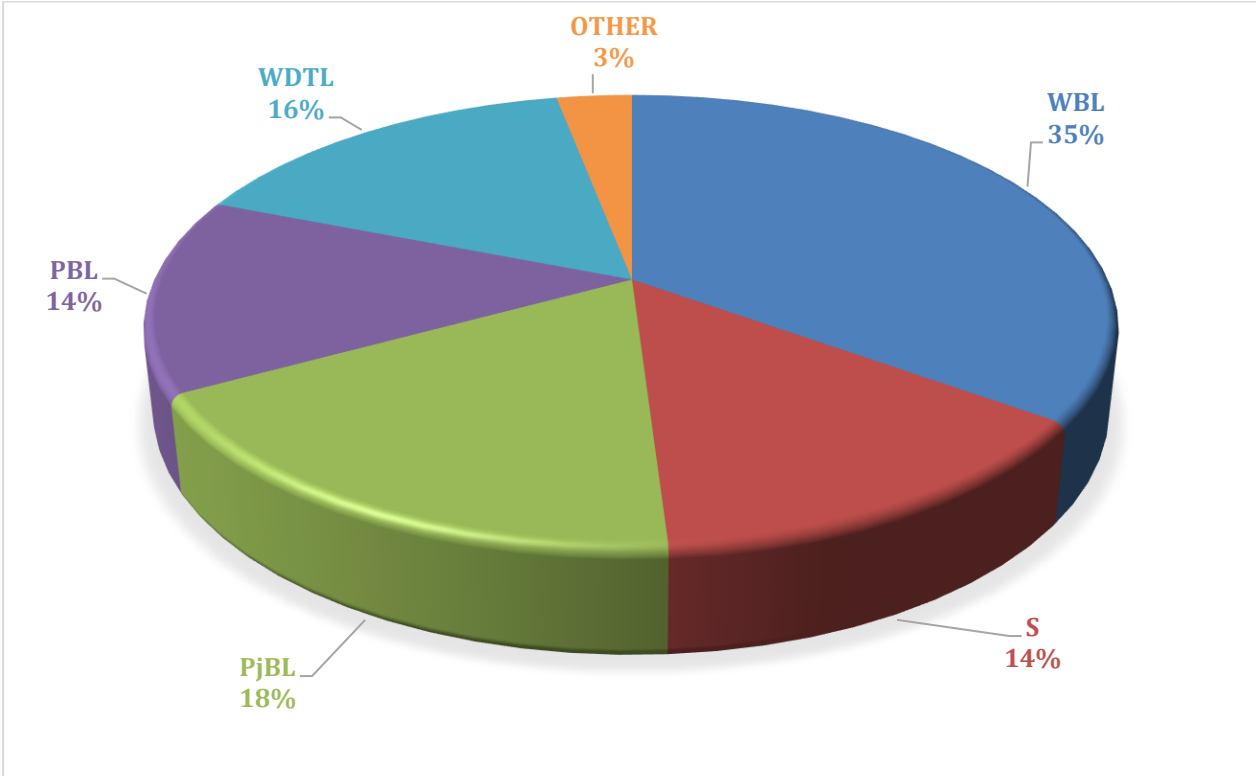
It needs to be noted that due to the aim and exploratory nature of the survey it was not possible to provide a specific number to a population or sample in terms of the number of qualifications targeted. The survey was specifically aimed at; determining how many qualifications there are that contain a WIL component; the various WIL modalities included in these qualifications as well as solutions for the improvement of WIL and training needs of WIL staff.

FINDINGS

This survey is the first data collection of its kind, and the survey results provided THENSA with a baseline from which to measure progress. The results clearly demonstrate the extent and diversity of WIL activities across our sector and reflect the commitment of universities towards improving graduate employability. This understanding is critical to improve the breadth and depth of WIL opportunities so that all students – regardless of their background – can benefit.

The findings reflect the WIL modalities used in the institutions, funding received for WIL and training needs. The WIL modalities used within the institutions is identified as work based learning (WBL), problem-based learning (PBL), project-based learning (PjBL), work directed theoretical learning (WDTL) and simulations (S). There are two institutions that indicated that they are using other WIL modalities such as: Professional Practicum and online videos (demonstrations not simulations). Figure 2 below highlight the WIL modalities of preferences of choice within the institutions.

FIGURE 2: Pie graph depicting WIL modalities of preference at THENSA member institutions:



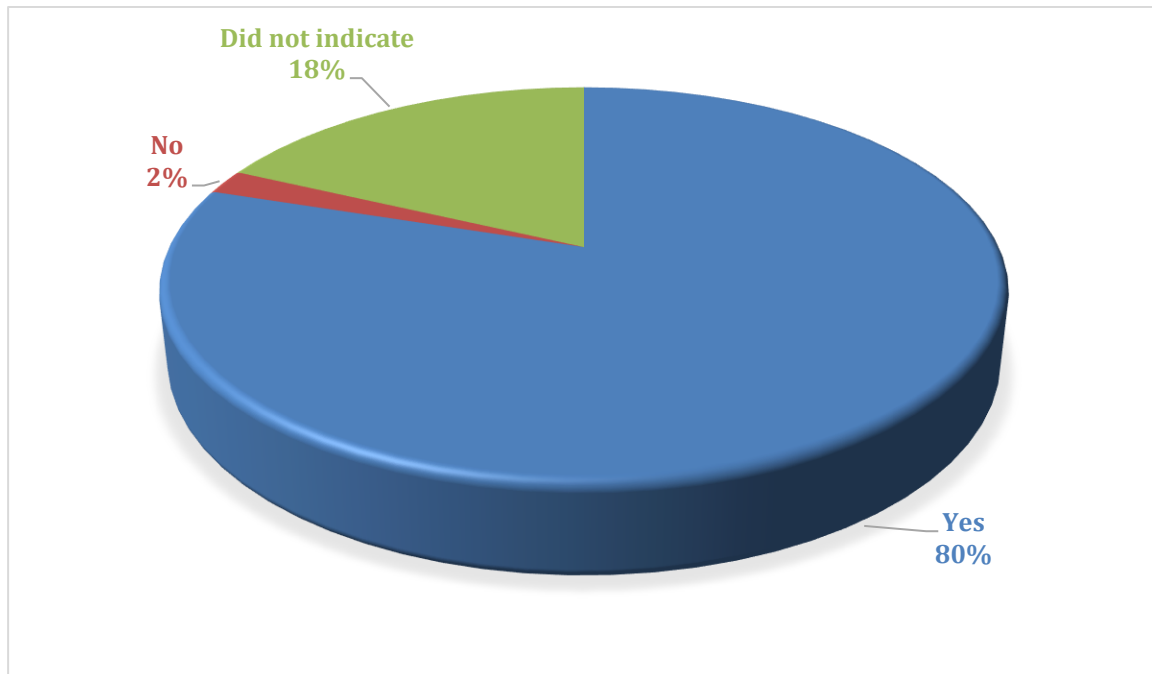
As highlighted in Figure 1 the three most common modalities used within the institutions are WBL (35%), PjBL (18%) and WDTL (16%). Since 35% of the qualifications are still doing WBL where students need to be placed with employers it further raises concern regarding the lack of funding for this modality by the Department of Higher Education and Training (DHET). The data however has shown that from the 293 qualifications 119 qualifications (41%) receive funding for the WBL modality in some form, e.g. Sector Education Training Authority (SETA) stipends/bursaries, etc. (SETAs form part of the South African economy that is divided into 21 sectors, each with an established SETA that provides information on education and training offered by employers within their sectors. SETAs provide funding for WIL on a discretionary basis.) This is problematic though since the choice of WIL modality will then be unduly influenced by monetary concerns instead of what is best for the programme and students.

It can also be argued that COVID-19 has forced institutions to adopt different approaches to successfully complete the compulsory WIL component of qualifications. The probability for this is increased by the WIL guidelines to follow during the pandemic endorsed by DHET that makes provision for various options to complete the WIL components of qualifications. Notably, the guidelines include a reduction of the time required to spend on placement in industry (WBL) together with the complementary use of the other WIL modalities.

It was clear from the data received that the majority of staff involved with WIL at the THENSA member institutions did not have formal accredited WIL training. As shown in Figure 3 below from the 293 environmental scan templates received 18% (55) did not indicate if they need accredited training, 2% (7)

indicated that they do not need training and 80% (231) of the staff indicated that they needed accredited WIL training. Like one of the participants highlighted in a comment “For those of us who do not possess a formal qualification in teaching WIL, will highly appreciate training to assist in navigating the altered environment that we are now operating in.”

FIGURE 3: Need accredited training for WIL coordinators and directors



Whilst some members of staff indicated that they did receive some form of training from their WIL offices, they could not provide details on whether this was formal WIL training as a qualification or just training on understanding the roles and responsibilities of a WIL coordinator. The following comment from one of the participants is relevant to this study: “The current global dynamics i.e., pandemic have presented us with an opportunity to review our processes and align or change”. What is clear from the above finding is that the majority of staff (80%) at THENSA member Institutions indicated that they needed accredited training in WIL. The positive to be taken from this is that staff are willing to be trained which augurs well for the future of WIL based on such commitment from staff to improve themselves.

CONCLUSIONS AND RECOMMENDATIONS:

WIL is used extensively by THENSA member institutions given an average of more than 30 qualifications with a WIL component at these universities. WBL is still the most prevalent WIL modality used despite the lack of official subsidy from DHET. This is most probably due to the impact and evidence of WBL on enhancing the employability of students. A combination of WIL modalities is used in qualifications. This could be due to the lack of subsidy for WBL and/or the impact of the pandemic on WBL opportunities together with the WIL guidelines endorsed by DHET to follow during the pandemic.

A definite need for formal training in WIL was identified. THENSA is well equipped to address these needs given the programmes already developed as well as the expertise and links to external expertise such as WACE and other international links and agreements in place, notably with the Technological Higher Education Association (THEA) in Ireland as well as the Higher Education Reform Experts South Africa (HERESA) project with a number of universities in Europe.

To address the official lack of subsidy, it is recommended that the proposal for the funding of WIL submitted by THENSA during 2018 to DHET be followed with an updated proposal enhanced by the results of this WIL scan once completed. Given the expertise available to and existing in THENSA it is recommended that targeted training is developed and presented to higher education institutions in South Africa based on the different types of universities and colleges' needs in South Africa once the WIL scan is completed.

In addition, it is recommended that WIL is developed as a field of study in South Africa to address the needs identified from a more macro perspective. Expertise has already been identified internationally, notably Sweden and Ireland, to assist in this regard. A joint conference should be considered with relevant international partners.

REFERENCES

- Department of Higher Education and Training 2013. *White Paper for Post-School Education and Training*. Pretoria: Department of Higher Education and Training.
- Engel-Hills, P., Garraway, J., Jacobs, C., Volbrecht, T., & Winberg, C. (June 2010). Work-integrated learning (WIL) and the HEQF. *NQF Research Conference* (pp. 2-4). https://www.saqa.org.za/docs/pres/2010/volbrecht_t.pdf.
- Gamble, Patrick, and Peach. 2010. *Internationalising work-integrated learning: Creating global citizens to meet the economic crisis and the skills shortage*. Available at https://www.researchgate.net/publication/50875003_Internationalising_work-integrated_learning_Creating_global_citizens_to_meet_the_economic_crisis_and_the_skills_shortage (accessed 13 March 2015).
- Jacobs, H.S. 2015. *A strategy to optimise the contribution of work integrated learning towards the employability of students of the Central University of Technology, Free State*. Doctoral thesis, Central University of Technology, Free State. <http://hdl.handle.net/11462/773>
- Orrell, J. 2011. Good practice report: work-integrated learning. (http://www.olt.gov.au/system/files/resources/GPR_Work_Integrated_Learning_Orrell_2011.pdf) Retrieved on 4 February 2014.
- Winberg, C., Engel-Hills, P., Garraway, J. & Jacobs, C. (2011), *Council on Higher Education: Work-Integrated Learning: Good Practice Guide*, Juta, Pretoria.). Available at http://digitalknowledge.cput.ac.za/bitstream/11189/5205/3/Winberg_C_Engel-Hills_P_Garraway_J_Jacobs_C_Work-Integrated%20Learning_pdf (accessed 8 June 2020).

Virtual agile project-based learning experiences for undergraduate software development students

ROELIEN BRINK

NAZEER JOSEPH

University of Johannesburg, Johannesburg, South Africa

INTRODUCTION

Teaching the agile philosophy in higher education has become commonplace over recent years (Martin et al., 2017; Rodriguez, Soria, & Campo, 2015). At the core, agile focuses on developing software solutions incrementally with a people rather than process emphasis. Hurbungs and Nagowah (2019) have further explored teaching the agile philosophy within a developing country context as they identified the future need for upskilling students around the phenomenon. An agile method most commonly used in industry is Scrum (Standish Group, 2018; Joseph, Marnewick, & Santana, 2016). Scrum involves developing software through short sprints or cycles which culminate in progress reflections to learn where improvements can be made during each sprint. Scrum has subsequently been adopted in other software development programmes and modules as the basis for teaching agile (Ding, Yousef, & Yue, 2017; Mahnic, 2012). Scrum includes events and artefacts at the most basic level. The events are stage gates and activities the project team must execute. The artefacts are the deliverables the team must produce and refine during the events.

Meier, Kropp, and Perellano (2016) developed a simple module plan for an agile software development project. The first phase was to have a kick-off meeting where students had to present their project ideas and briefly discuss their proposed solutions. The second phase required students to develop an initial product backlog (software solution requirements) to show an initial understanding of the requirements for their solution. The third phase required the students to execute their sprints (short software development increments) and develop their solution in two-week increments. The final phase required students to present their final software solution. Overall, Meier, Kropp, and Perellano (2016) found that students enjoyed the experience and revelled in the fact they were in control of the software development process.

The challenge of developing agile competencies was the COVID-19 pandemic as the PjBL environment had to realise a virtual paradigm shift. Not only did students have to experience the agile philosophy, they also had to experience it through virtual mechanisms that introduced a plethora of relational complexities. The PjBL environment serves as a real-world simulation for executing agile software development projects and is a modality of work-integrated learning (WIL). A dyadic relationship means it is a one on one relationship between all the role players within this virtual agile PjBL experience. Therefore it is important to understand all the role players within the virtual agile PjBL experience and how complex this communication can be between the role players of the virtual agile PjBL environment. The practical experience of PjBL simulates the complex dyadic relationships between WIL stakeholders.

COURSE OUTLINE

While there are other more intricate approaches to implementing agile in a software development module, Meier, Kropp, and Perellano (2016) was used as the foundation for the third year software development module investigated in this paper. Furthermore, the approach of Meier, Kropp, and Perellano (2016) was adapted from a virtual perspective given the constraints of COVID-19. The module was structured to include several virtual sessions and activities. Students first formed groups as they saw fit and required to go out and identify a real-world problem by engaging with various businesses. The idea was to apply the philosophy WIL for students to address a real-world problem while gaining experience of how to execute a virtual agile project. Once the groups identified a real-world problem, they had to propose and present a solution to the two module facilitators. The facilitators provided feedback around the feasibility and viability of the solution based on the constraints around the project and what would be practically applicable in a real-world environment.

Before initialising the project, students were required to attend a virtual workshop on Scrum to ensure they understood the iterative development and the elements of Scrum. Three key principles were discussed in the workshop: (i) the scrum team, (ii) scrum events, (iii) scrum artefacts. Emphasis was placed on the scrum events and artefacts as this was most important to the students during their software development journey.

The next phase was for the groups to begin working virtually through several platforms on their sprints cycles and execute the events presented in the workshop. The groups were required to perform two-week sprints and showcase their sprint review virtually to the two module facilitators. Industry experts were included in the sprint reviews where possible. This provided students with a platform to gain input on how they should tackle the remaining product backlog. As part of the sprint review, groups were required to submit a reflective document including what they achieved, what they have not achieved and their plan of action moving forward. The weeks where groups did not have to present, virtual tutorial sessions were allocated for groups to consult with the module facilitators and tutors who were postgraduate software development students.

The final phase included two elements. Firstly, the groups had to present their final solution to the module facilitators and invited industry panel members to facilitate the WIL experience. Secondly, the groups had to participate in a final virtual project day where they had to present their solutions to industry and five expert judges through virtual stands. The aim was for students to gain real-world exposure and interact with experts who implement agile in industry.

EVALUATION AND RESULTS

A pragmatic and quantitative approach was adopted in this research. A single case study approach was adopted as a third year software development project module was investigated. The quantitative approach was implemented in the form of a close-ended questionnaire and calculating the complex relationships during PjBL experience. The questionnaire included questions about the experience of a students during the PjBL module experience. The questionnaire was completed by 25 students at a 23,58% response rate.

COMPLEXITY OF THE VIRTUAL AGILE PJBL PROCESS

According to Hargie (2011:452), to determine the potential two-way relationships, the formula to chart the number of dyadic relationships (R) in a group, as a factor of number of members (n) is as follows:

$$R = \frac{n(n-1)}{2}$$

The following examples explain the complexity of the virtual agile PjBL scenarios for dyadic relationships between all the relevant role-players (Table 1). The complexity of information flow between the role-players is affected by the number of role-players involved in this virtual agile PjBL process. The number of the role-players as shown in Table 1 can differ and based on the number of partners involved it can have a direct impact on the number of dyadic relationships.

TABLE 1: Calculation of number of dyadic relationships (Adapted from Brink 2013)

Complexity of Virtual Agile Project Based learning: Software Development																	
Group #	HEI Admin	HEI Lecturer	Student	Student Admin	Industry Mentors	Industry Liaison	Alumni Mentor	Alumni Mentor Admin	Legal student	Legal student Admin	Tutor	Tutor Admin	Student integration	Student Integration Admin	n	(n-1)	$\frac{n(n-1)}{2}$ R
Example group	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	13	91
1	2	2	9	9	1	1	1	1	1	1	1	1	13	13	56	55	1540
2	2	2	8	8	2	4	4	1	1	1	1	1	1	1	37	36	666
3	2	2	7	7	1	1	1	1	1	1	1	1	1	1	28	27	378
4	2	2	8	8	1	1	1	1	1	1	1	1	1	1	30	29	435
5	2	2	8	8	2	2	1	1	1	1	1	1	1	1	32	31	496
6	2	2	7	7	2	2	1	1	1	1	1	1	1	1	30	29	435
7	2	2	7	7	2	2	1	1	1	1	1	1	1	1	30	29	435
8	2	2	6	6	1	1	1	1	1	1	1	1	1	1	26	25	325
9	2	2	8	8	1	1	1	1	1	1	1	1	1	1	30	29	435
10	2	2	8	8	1	1	1	1	1	1	1	1	1	1	30	29	435
11	2	2	8	8	1	1	1	1	1	1	1	1	1	1	30	29	435
12	2	2	8	8	1	1	1	1	1	1	1	1	1	1	30	29	435
13	2	2	8	8	1	1	1	1	1	1	1	1	1	1	30	29	435
14	2	2	3	3	1	1	1	1	1	1	1	1	1	1	20	19	190
															439	438	96141

To explain this trend a sample of the following role-players one HEI lecturer, one HEI administrator, one student, one student administrator, one industry mentor and one industry administrator, one Alumni mentor, one Alumni mentor administrator, one legal student, one legal student administrator, one tutor, one tutor administrator, one student integration, one student integration administrator, makes up the full dyadic relationship cycle for this virtual agile PjBL. In using the dyadic relationship calculation, the complexity value of the relationship is reflected in the R value. The R value refers to the number of separate potential two-way relationships between the role-players. When the formula group consists of six role-players in a relationship, the calculation is done as follows. The formula group (*cf* Table 1: Example group) would then consist of $[14 \times 13] / 2 = 91$ separate potential two-way relationships between the role-players. The 14 example groups in Table 1 are the groups in the class participating on 14 different industry projects and display the complexity of the virtual agile PjBL dyadic relationship where the numbers of the role-players increase substantially (*cf* Table 1: Group 1 – 14). The student integration and student integration administration are where Group 1 develop the comprehensive website by integrating all 13 other projects before the virtual project presentation day.

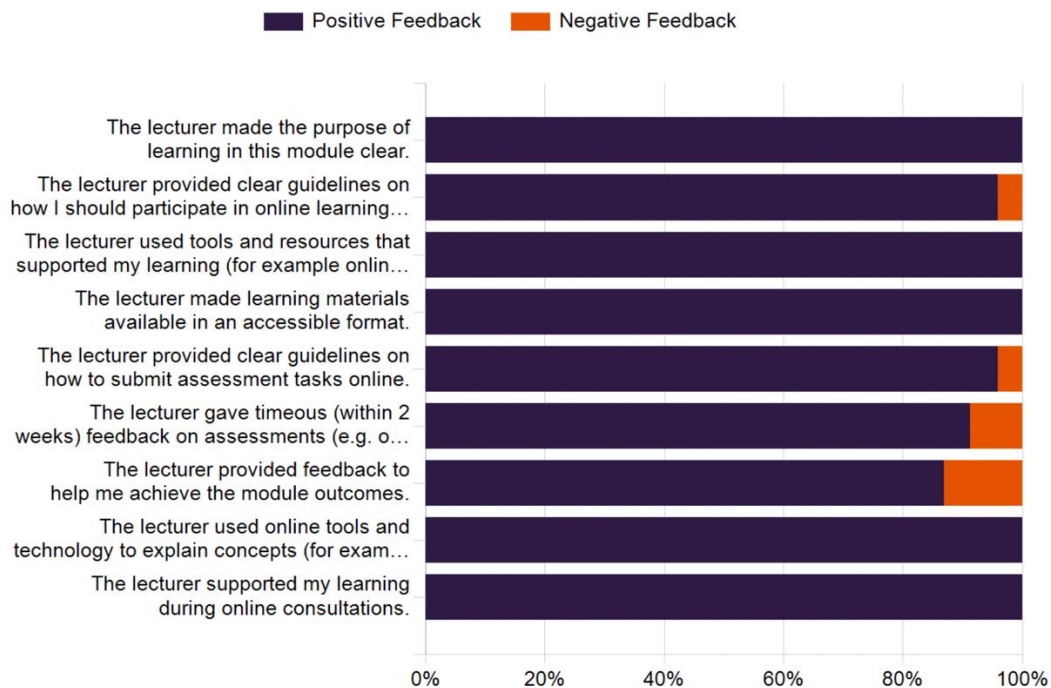
The complexity of the dyadic relationships in the virtual agile PjBL process increases with the number of role-players involved in the process. The rationale of demonstrating the complexity of relationships based on number of role-players involved, impacts on the realisation that the information related to these relationships have to be well-managed. The management of these relationships is facilitated through the correct and accurate use of agile philosophies in a virtual environment. This requires meticulous planning, logical systems, and well recorded system updates of any activities which relate to PjBL experience. The number of role-players will dictate the complexity of the PjBL model which in turn requires critical management to execute the agile software development process effectively. In this virtual agile PjBL, the total dyadic relationship is 96141. The 96141 relationships imply that the various relationships between all the different role-players require proactive realisation of agile philosophies in a complex PjBL environment.

RESULTS AND FINDINGS

A questionnaire was used to further articulate how experienced the implementation of a virtual agile PjBL environment. Figure 1 provides an overview of the PjBL experience distribution amongst students. Overall student had a positive experience of the virtual agile PjBL environment. Key findings include the use of tools and resources that supported the virtual agile PjBL experience. Students had a positive experience of using several tools such as WhatsApp, Blackboard Collaborate, Microsoft Teams and Jira or Trello. The students also positively experienced the use of virtual tools and technologies to explain and apply agile philosophies in their respective virtual agile PjBL endeavour. Also, the majority of students were positive in their experience of the lecturer, moderators and facilitators promoting and supporting the various virtual consultations and presentations of the virtual agile PjBL environment.

Overall, the students had a positive PjBL experience and gained real-world exposure through the WIL modality. Furthermore, the WIL experience highlighted the dyadic relationship complexities when working on the real-world agile software development project simulation. The PjBL and WIL philosophies used in the third year software development module provided a solid foundation for developing real-world skills that students can apply in the world of work.

FIGURE 1: PjBL experience distribution



CONCLUSION

It's crucial to capacitate and empower students with suitable skills and knowledge to better prepare them for industry. Establishing initiatives and engagements with industry partners creates the platform to launch the critical imperative. Student development includes learning, engagement, software utilisation and continues evaluation and guidance. Students are eager to learn and improve skills through the virtual agile PjBL learning process. Future virtual agile PjBL endeavours require continues research in creating unique platforms for learning of this multifaceted program to benefit student learning while understanding industry requirements. The establishment of robust PjBL practices will result in students leaving higher education understanding what is required by industry for employability and create students who are ready to "hit the ground running" in their professional career.

REFERENCES

- Brink, R. (2013). An information management framework for the work-integrated learning process (Unpublished doctoral thesis). University of Johannesburg, Auckland Park, Johannesburg.
- Devedžić, V., & Milenkovic, S. R. (2011). Teaching Agile Software Development: A Case Study. *IEEE Transactions on Education*, 54(2), 273-278. doi:10.1109/TE.2010.2052104
- Ding, D., Yousef, M., & Yue, X. (2017). A case study for teaching students agile and scrum in Capstone course. *Journal of Computing Sciences in Colleges*, 32(5), 95-101.
- Dym, C. L., Agogino, A. M., Eris, O., Frey, D. D., & Leifer, L. J. (2005). Engineering Design Thinking, Teaching and Learn. *Journal of Engineering Education*, 94, 103-120.

- Hurbungs, V., & Nagowah, S. D. (2019). A Practical Approach to Teaching Agile Methodologies and Principles at Tertiary Level Using Student-Centred Activities. In D. Parsons & K. MacCallum (Eds.), *Agile and Lean Concepts for Teaching and Learning: Bringing Methodologies from Industry to the Classroom* (pp. 355-389). Singapore: Springer Singapore.
- Joseph, N., Marnewick, C., & Santana, M. J. (2016). Agile software development and IT project performance in South Africa: a positive relationship? Paper presented at the The 25th International Conference for Management of Technology, Orlando, FL.
- Kropp, M., & Meier, A. (2013, 19-21 May). Teaching agile software development at university level: Values, management, and craftsmanship. Paper presented at the 2013 26th International Conference on Software Engineering Education and Training (CSEE&T).
- Mahnic, V. (2012). A Capstone Course on Agile Software Development Using Scrum. *IEEE Transactions on Education*, 55(1), 99-106. doi:10.1109/TE.2011.2142311
- Martin, A., Anslow, C., & Johnson, D. (2017). *Teaching Agile Methods to Software Engineering Professionals: 10 Years, 1000 Release Plans*, Cham.
- Meier, A., Kropp, M., & Perellano, G. (2016, 5-6 April 2016). Experience Report of Teaching Agile Collaboration and Values: Agile Software Development in Large Student Teams. Paper presented at the 2016 IEEE 29th International Conference on Software Engineering Education and Training (CSEET).
- Rodriguez, G., Soria, Á., & Campo, M. (2015). Virtual Scrum: A teaching aid to introduce undergraduate software engineering students to scrum. *Computer Applications in Engineering Education*, 23(1), 147-156. doi:10.1002/cae.21588
- Standish Group. (2018). *CHAOS Report Series - Decision Latency Theory: It Is All About the Interval*. Retrieved from Boston, MA:
- Stuurman, N. (2017). Skills shortage in the ICT sector critical to businesses development. Retrieved from <https://www.iol.co.za/business-report/skills-shortage-in-the-ict-sector-critical-to-businesses-development-12320060>
- VersionOne Inc. (2019). The 13th Annual State of Agile Report. Retrieved from <https://www.stateofagile.com/#ufh-i-521251909-13th-annual-state-of-agile-report/473508>

Acquisition of future skills at the workplace - new demands for professionals within high-tech industries: Results of an international study in the blockchain field

MARINA BRUNNER

ULF-DANIEL EHLERS

Baden-Württemberg Cooperative State University, Karlsruhe, Germany

INTRODUCTION

Work-integrated learning (WIL) is internationally recognized and nationally endorsed as a strategy to ensure students are exposed to authentic learning experiences with the opportunity to apply theoretical concepts to practice-based tasks, ultimately enhancing graduate employability (Knight & Yorke, 2003; Peach & Matthews, 2011). In particular, the concept carries important potential to reduce a mismatch between those skills needed at the workplace in an ever faster changing and evolving professional environment and those which higher education programs can provide today. This is especially true for areas within future digital high-tech industry fields, as a new international study shows for the European blockchain industry. We cannot fail to see the emerging importance of future skills, also called key competencies or 21st century skills (OECD, 2018; World Economic Forum, 2020), because there is a discrepancy between the reality of what students are capable of doing and the expectations of employers (Ehlers, 2020).

In recent studies, the term “future skills” emerged and is about to prevail (Dettmers & Jochmann, 2021; Samochowiec, 2020). In this paper we demonstrate the perceived importance of future skills from the perspective of industry stakeholders within the blockchain industry. This field represents one of the currently most advanced tech sectors and our intention is to show how future skills emerge to the forefront of skill needs. The research has been conducted within the European Blockchain Skills Alliance CHAISE which is comprising more than twenty organisations from the field of higher education and industry working on skills demands and work-integrated learning concepts. Our research results show - for the first time within European skills research - that of the surveyed blockchain stakeholders attribute the same importance to future skills as to technical skills.

The paper represents authors' original research and results, which are published and discussed for the field of work-integrated learning for the first time. It draws on original collected and analysed primary data from European Blockchain actors.

With a multimethod mix survey design we collected and analysed data on skill demands and skill supply within the Blockchain industry sector in more than fifteen European countries, conducted a multi-stakeholder gap analysis, and constitute a skill mismatch. In this context the paper focusses on two leading research questions:

1. Which skills are needed and how important are future skills in a highly evolving technical labour market?
2. How can skill needs and demands be identified in a collaborative approach between higher education and industry to respond to rapidly changing skill requirements?

We outline that future skills gain importance within the overall field of skill demands and that skill supply is not yet ready to meet the demands. The results are discussed with a view on emerging concepts of work-integrated learning. Section 2 gives an overview of the research design and methodology. Section 3 presents the conceptual framework for the research study. Section 4 shows the study's results which are discussed in Section 5 in relation to the concept of work-integrated learning.

METHODOLOGY DESIGN AND CONTEXT OF THE STUDY

Building skills intelligence is essential in rapidly changing labour markets because skills shortages can produce adverse socio-economic consequences on development and employment. Skills Intelligence is based on various qualitative and quantitative empirical research methods that bring together existing and newly researched labour market information to analyse existing and projected future skills needs (European Commission, 2015; ILO, 2017). With these methods, we analyse if a "skills mismatch" can be found that shows the gap between skill demand and skill supply.

The research strategy is to propose a triangulation of methodologies in order to gain a comprehensive understanding of

- a) the skills currently needed and projected in the Blockchain (BC) field
- b) offers of educational institutions
- c) the current BC labour market

During the research process three studies and two registries have been developed that form the basis for the BC skill mismatch study (Brunner & Ehlers, 2021). Table 1 gives an overview of the different research activities and the data collected.

WHICH SKILLS? CONCEPTUAL FRAMEWORK FOR THE RESEARCH STUDY

Which skills are important for BC professionals to prevail in the dynamic high-tech BC labour market with fast changing job requirements today and in the future? To find an answer to this question, the European Blockchain Skills Alliance CHAISE performed an extensive BC skills research initiative. It is based on the insight that we need to understand and operationalize the concept of "skills" and relate it in depth to the field, involve a multitude of stakeholder perspectives and derive answers from qualitative and quantitative data sources to arrive at a broad insight with value to the field. While we use the term "skills" for reasons of terminological compatibility with the current discussion and policy papers, what we actually refer to in terms of educational research is rather the concept of "competence".

Skills are one element of competencies but the two terms are not to be used synonymously. Based on the European Skills, Competences, Qualifications and Occupations Initiatives (ESCO, see also (ESCO, 2022)) and in accordance with the European Qualification Framework (EQF) we define competence as follows: “Competence means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development” (ESCO, 2022).

TABLE 1: Research steps and data collected and analysed

Research activities	Data collected and analysed	Research methods
Desk-based research	25 most cited paper	Qualitative document analysis
Data collection official statistical databases	14 relevant databases examined	Quantitative data analysis
European survey on BC skills	304 survey participants	Quantitative standardised online survey
In-depth expert interviews	36 interviews conducted (29 skill demand & 7 skill supply)	Qualitative guideline-based interviews
Blockchain job ad analysis	459 job ads collected ¹ 314 analysed	Qualitative document analysis
Blockchain educational and training offers	133 educational and training offers collected ² 120 analysed	Qualitative document analysis
Analysis of online fora and communities	17 communities and fora analysed	Qualitative document analysis

Secondly, related to a vast body of research on competencies which are specifically relevant to emerging challenges within the field of work but also related to the larger area of personal life, we have selected such competencies which we believe are particularly relevant in these contexts and call them “future skills” (please refer to Ehlers, 2020 for further elaboration on the 17 future skill profiles).

Although using the term “Blockchain skills”, our research is focusing on the wider meaning of competencies related to the ability to act successfully in an unknown future context – as elaborated for the term “future skills”. *BC skills* in this study shall therefore be defined as competencies which contain knowledge about BC, which are related to the application of BC in both known and unknown contexts, which are comprising attitudes and values around the work with BC for oneself, the organisational and social environment and the task itself, the individual subjective and personal development domain itself, as well as the ability to critically reflect on BC-related issues, opportunities and challenges in private or professional life. This study differentiates between (Fig. 1 gives an overview if the skills):

- a) Technical and Blockchain specific skills
- b) Professional / Business skills
- c) Transversal Future skills

¹ See [registry of Blockchain job ads](#)

² See registry of [Blockchain educational and training offerings](#)

FIGURE 1: List of skills for Blockchain professionals



In order to meet the demand for BC experts through future educational programmes, it is necessary to clearly define which professions need which qualifications and skills. The study focused on three different job profiles, which were already increasingly mentioned in the job ads (n=314). These are the Blockchain Architect (BA), the Blockchain Developer (BD) and the Blockchain Manager (BM).

The BA is comparable to the role of the solution architect. This role designs the multileveled architecture of a large BC system and software landscape and ensures the coherence of all aspects of a project as an integrated system. The BD codes the BC applications and takes care of problem solving at the micro level. The tasks of the BM are to track implementation progress and maintain close cooperation with business managers or marketing professionals to identify the market requirements for new BC systems and applications.

RESULTS OF THE STUDY: FUTURE SKILLS AS NEW EMERGING CURRENCY

In the survey (n=304), 71% of companies stated that BC skills are important to them. For the analysis, the participants were shown different skills from the previously mentioned skill clusters, which they were asked to classify as important or unimportant for the individual roles. Figure 2 gives an overview of the distribution of the importance of the different skills according to roles.

The importance of the various skill sets differs significantly between the roles. A clear demand for future skills (see tab. 2) becomes obvious as they are the only skill set where each skill is important for all three roles (>50%).

This also corresponds with the companies' assessments of how important future skills are today and in the next three years. In both cases, more than 90 % of the respondents describe them as either "somewhat important" or "very important".

FIGURE 2: Skill Index overview BC Architect, BC Developer and BC Manager

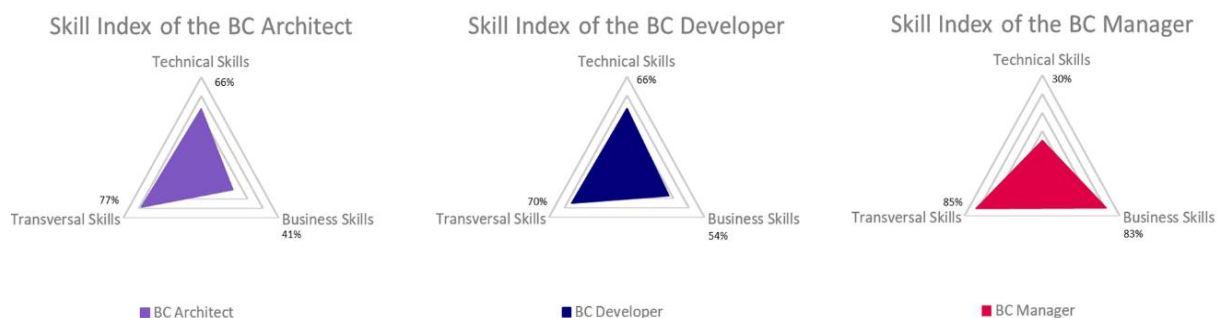


TABLE 2: Importance of future skills for different roles of BC professionals³

Transversal Future skills	BC Architect		BC Developer		BC Manager	
	Imp.	Mis.	Imp.	Mis.	Imp.	Mis.
Learning literacy & Metacognitive skills	++		+		+	
Self-efficacy & Self-confidence	++		++	*	++	
Self-determination & Autonomy	++		++	*	+	
Self-Management / Organisation / Regulation & Self-Responsibility	+		+	*	++	
Decision Competence & Responsibility-taking	++	*	+	*	++	
Initiative & Performance Competence	+		+	*	++	
Ambiguity Competence	+	*	+	*	++	*
Ethical & Environmental Competence	+		+		++	*
Design-Thinking Competence	++		+	*	+	
Innovation & Creativity skills	++	*	+	*	++	*
Systems & Networked Thinking	++		+		+	
Sensemaking	+		+		++	
Future Mindset & Willingness to change	++	*	+	*	++	
Cooperation Competence	++		++	*	++	
Communication Competence	++	*	++	**	++	

Importance: 0 < 50; + >= 50; ++ >75=; Missing: * >= 35%; **>=50%

³ Please refer to <http://nextskills.org/future-skills-finder/> for definition of the future skills mentioned in Table 2.

DISCUSSION: EMERGING THEMES FOR SKILLS DEVELOPMENT AND WORK-INTEGRATED LEARNING

The data analysis and the importance of future skills demand as well as the currently unsatisfactory structure of skill supply within higher education leads to four emerging themes which are discussed below:

Emerging Theme 1: Importance of New Approaches to Meet Future Skills Demand from the Labour Market

The survey revealed a significant need for future skills within the professional BC profiles analysed. At the same time, it shows that these skills are currently underrepresented in higher education programs and initiatives, which have been analysed.

Emerging Theme 2: The Time Gap Hypothesis of Skills Management

The study has been able to contrast the demands resulting from an analysis of 314 official job ads for BC profiles and their skill requirements against the results of a Europe-wide standardised online survey in which 304 blockchain companies took part. This revealed an astonishing gap between formally demanded skills (job ads) and those declared important on level of work reality.

Emerging theme 3: Importance of Work-Integrated Higher Education Forms like Professional Higher Education

In the recent period, higher education systems have witnessed blurring borders among formerly set types of higher education institutions (Ehlers, 2020). Despite the diversity of approaches at every level of higher education, the issue of quality remains central if all the different types of higher education are to remain different but of value to the various stakeholders. In times of skills revolution, higher education needs to move from a primary focus of pure knowledge-orientation to a new educational paradigm that is specifically designed to support the development of skills for future graduates (Ehlers, 2020).

Emerging Theme 4: Work-Integrated Learning as a New Challenge for Organisational Learning Cultures

The interviews conducted revealed that a new paradigm of constant professionalisation and learning is today's reality in high technology sectors of the labour markets. The needed environments cannot be provided or be created for employees but have to be established and enabled through participation of employees through them and for themselves.

SUMMARY AND CONCLUSION

To improve the search for talent, we need a clear understanding of the tasks and roles of BC specific job profiles. This requires an official definition of the different professional roles in the BC sector and the skill sets they require. BC education programs have to embrace modules that reflect the wide range of usage of the technology within different departments of a company and different industries. BC professions predominantly require future skills beyond what has been known so far, which is also related to the many changes and innovations in the BC sector. A clear skill shift from hard skills to future skills can be observed.

It requires professionals who can continuously adapt to their fast-moving environment. Future skills are indispensable in this context. Higher education institutions and industry players should join forces and facilitate practice-oriented training in this area. In addition, there should be a regular exchange to prepare students with real world use cases for the new dynamic challenges of the working world. PHE institutions, with their practice integrated mode of studies, are a model which will further gain importance because it provides the necessary experience-based learning environments to develop future skills.

REFERENCES

- Brunner, M., & Ehlers, U.-D. (2021). *Chaise - Blockchain skills for Europe: D2.5.1: Study on skills mismatches in the European Blockchain sector*. https://next-education.org/wp-content/uploads/2021/11/Chaise_WP2_D2.5.1_Study-on-Skill-Mismatch-in-the-blockchain-sector_v3.pdf
- Dettmers, S., & Jochmann, W. (2021). *Kienbaum & Stepstone Studie 2021: Future Skills - Future Learning*. Stepstone, Kienbaum. https://media.kienbaum.com/wp-content/uploads/sites/13/2021/06/Kienbaum-StepStone-Studie_2021_WEB.pdf
- Ehlers, U.-D. (2020). *Future Skills: Lernen der Zukunft - Hochschule der Zukunft* (1. Auflage 2020). *Zukunft der Hochschulbildung - Future Higher Education*. Springer Fachmedien Wiesbaden GmbH; Springer VS.
- ESCO. (2022). *Competence*. Europäische Kommission. <https://ec.europa.eu/esco/portal/escopedia/Competence>
- European Commission. (2015). *Skills Governance in the EU Member States: Synthesis Report for the EEPO*. <https://ec.europa.eu/social/BlobServlet?docId=15587&langId=en>
- ILO. (2017). *Skill needs anticipation: Systems and approaches.: Analysis of stakeholder survey on skill needs assessment and anticipation*. Geneva.
- Knight, P., & Yorke, M. (2003). *Learning, curriculum and employability in higher education* [Pbk. ed]. RoutledgeFalmer.
- OECD. (2018). *The Future of Education and Skills: Education 2030*. OECD. [https://www.oecd.org/education/2030/E2030%20Position%20Paper%20\(05.04.2018\).pdf](https://www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf)
- Peach, D., & Matthews, J. (2011). Work integrated learning for life: Encouraging agentic engagement. In K. Krause, M. Buckridge, C. Grimmer, & S. Purbrick-Illek (Eds.), *Research and development in higher education: Vol. 34. Research and Development in Higher Education: Higher education on the edge* (pp. 227–237). HERDSA.
- Samochowiec, J. (2020). *Future Skills: Four scenarios for the world of tomorrow*. GDI Gottlieb Duttweiler Institute. https://www.gdi.ch/sites/default/files/documents/2020-05/2020_e_future-skills_jacobsfoundation_summary.pdf
- World Economic Forum (Ed.). (2020). *The Future of Jobs Report 2020*. https://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf

Workplace friendships and organizational commitment in a remote work setting

DAVID DREWERY

KATIE KNAPP

University of Waterloo, Waterloo, Canada

INTRODUCTION

Many employers participate in work-integrated learning (WIL) programs to recruit and retain talented students. To this end, they are concerned with developing students' organizational commitment. Such commitment represents a psychological bond between student and organization with aspects of emotional attachment and obligation (Meyer & Allen, 1991). It has implications for students' relationships with employers. The greater students' organizational commitment, the greater their intentions to work for their employer in the future (Drewery et al., 2019). This is relevant to the success of WIL programs because such programs depend in part on employer participation (Fleming et al., 2018). When WIL helps employers meet their recruitment goals, they are more likely to continue participating.

The quality of students' work experiences is important to the development of their organizational commitment. Work experience quality is a subjective assessment of the extent to which the work experience met expectations on salient dimensions (Drewery et al., 2016). Such dimensions include learning (the extent to which the student developed new competencies), impact (the extent to which they made a meaningful contribution to the organization), and relevance (the strength of the link between the work experience, students' academic training, and career goals). The greater these aspects of work experience quality, the greater students' organizational commitment (Drewery et al., 2019).

This understanding of work experience quality and its relationship to students' organizational commitment seems to overlook the role of relational dynamics between students and others. Attachments to members of the organization are features of many work experiences and are often intertwined with attachments to the organization itself (Nielsen et al., 2000; Wombacher & Felfe, 2017). Thus, when relational dynamics between students and others are positive (e.g., supportive, enjoyable), students might develop stronger bonds with the organization (Pennaforte & Pretti, 2015). This suggests that a deeper understanding of organizational commitment in WIL programs requires an examination of work experience quality that includes relational dynamics between students and others at work.

This study explores the prevalence of workplace friendships and their association with students' organizational commitment in a remote co-operative education work term. Workplace friendships are voluntary and often enjoyable relationships with work colleagues (Nielsen et al., 2000). They represent a powerful relational dynamic that may help us understand organizational commitment (Nielsen et al., 2000). Yet, they are often overlooked in WIL settings, perhaps because they typically develop over long

periods (Sias & Cahill, 1998) that are not common to WIL programs. Our goal was to explore whether such friendships emerged and whether they explained organizational commitment while controlling for other aspects of work experience quality.

METHOD

Data Collection

Data used in the study were collected from two sources. The first was a survey of students' work experiences administered to a sample of University of Waterloo co-op students in November 2020. The goal of the survey was to understand selected dynamics of remote work experiences (i.e., those in which students worked from their own spaces instead of a traditional workplace). As part of the survey, participants were asked to respond to items regarding workplace friendship and organizational commitment. Workplace friendships can develop between those who do not work close to each other (Sias et al., 2012). Yet, as mentioned, the prevalence of such friendships in a WIL context is unclear. Demographic and contextual characteristics were also collected.

The second source of data for the study was a survey called the Rate My Work Term (RMWT) survey. The RMWT survey is administered to all co-op students at the authors' university near the end of each work experience. It asks students to report their satisfaction with several aspects of their work experience. Of interest to this study was a selection of items that correspond to dimensions of work experience quality described earlier: learning, impact, and relevance (Drewery et al., 2016). Additionally, because co-op is a form of WIL in which students are paid, an item about satisfaction with compensation from the RMWT survey was also included in the study.

Measures

Workplace friendships

Workplace friendships were measured with Nielsen et al.'s (2000) workplace friendship scale. The instrument contains 12 items regarding opportunities for friendship (e.g., "I have the opportunity to develop close friendships at my workplace") and feelings of friendship (e.g., "I have formed strong friendships at work") at work. Responses to each item were provided on five-point scales where 1 = "strongly disagree" and 5 = "strongly agree." The sum of the responses was used as a total workplace friendships score ($\alpha = .85$).

Work experience quality

Consistent with previous descriptions of work experience quality, measures of learning ("opportunities to learn or develop new skills"), impact ("opportunities to make meaningful contributions at work"), and relevance (between work and academic program, "how closely your work was related to your academic program") from the RMWT survey were included. Additionally, an item about appropriate compensation ("appropriate compensation and/or benefits") was included. Responses to each item were provided on five-point scales where 1 = "completely unsatisfied" and 5 = "completely satisfied."

Organizational commitment

Organizational commitment was measured using the affective commitment component of Allen & Meyer's (1990) three-component organizational commitment instrument. The eight items included in the present study concerned students' emotional bond with their organization (e.g., "I really feel as if this organization's problems are my own"). Responses to each item were provided on seven-point scales where 1 = "strongly disagree" and 7 = "strongly agree." The sum of the responses was used as a total organizational commitment score ($\alpha = .85$).

Situational variables

Two situational variables were included: organization size and term number. Organization size was measured in terms of the number of employees in the organization, where 1 = 1-9, 2 = 10-199, 3 = 100-1000, and 4 = more than 1000. This variable was included because organization size may be linked with organizational commitment (Zeffane, 1994). Term number was measured as the number of the work term that students were on at the time the data were collected. At this institution, most students complete between four and six work terms before they graduate. This variable was included because the number of work experiences students have may be related to their organizational commitment (Drewery et al., 2019).

RESULTS

Descriptive and Correlational Analyses

Participants' mean age was 20.8 years ($SD = 1.81$). Most (53.3%) participants were female, 41.1% were male, 0.2% were non-binary, and 0.7% preferred not to disclose their gender. Participants were enrolled in the following faculties: Arts (15.1%), Environment (8.4%), Engineering (37.5%), Health (6.1%), Mathematics (21.9%), and Science (9.7%). Organization sizes were as follows: 1 to 9 (4.8%), 10 to 99 (23.5%), 100 to 1000 (23.0%), and more than 1000 (48.7%). Participants' average work term number was 3.16 ($SD = 1.47$, min = 1, max = 6). Table 1 presents the descriptive statistics and correlations among variables used in the regression model.

TABLE 1: Descriptive statistics and correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(1) Workplace friendships	1.00								
(2) Organizational commitment	.51	1.00							
(3) Opportunity for learning	.29	.31	1.00						
(4) Opportunity for impact	.26	.34	.67	1.00					
(5) Work-program relevance	.10	.26	.50	.39	1.00				
(6) Appropriate compensation	.21	.25	.32	.34	.23	1.00			
(7) Organization size	-.05	.02	-.04	-.07	.02	.12	1.00		
(8) Term number	-.08	-.08	.10	.06	.09	.04	.03	1.00	
	<i>M</i>	40.38	33.05	4.28	4.36	3.79	4.23	3.15	3.16
	<i>SD</i>	9.01	9.06	.93	.90	1.13	.96	.95	1.47
	Possible range	12-84	8-64	1-5	1-5	1-5	1-5	1-4	1-6

Multiple Linear Regression Results

Table 2 presents the results of the multiple linear regression analysis predicting organizational commitment. Unstandardized regression weights are presented. As expected, the model was significant, $F(7,317) = 24.45, p < .001$, adjusted $R^2 = .34$. Workplace friendships were positively associated with organizational commitment ($B = .47, SE = .05, p < .001$). Additionally, consistent with previous research (Drewery et al., 2019), the results generally suggest that components of work experience quality are positively associated with organizational commitment. Although opportunities for learning ($B = .01, SE = .66, p = .99$) was not associated with organizational commitment, opportunities for impact ($B = 1.93, SE = .64, p = .003$) and work-program relevance ($B = 1.06, SE = .45, p = .018$) were positively associated with organizational commitment. Additionally, perception of appropriate compensation ($B = .96, SE = .47, p = .043$) was positively associated with organizational commitment. Neither organization size ($B = .24, SE = .44, p = .58$) nor term number ($B = -.48, SE = .28, p = .086$) were associated with organizational commitment.

TABLE 1: Multiple linear regression results ($n = 325$)

Variables	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
Constant	-1.72	3.31	-.52	.603
Workplace friendships	.47	.05	9.34	<.001
Opportunities for learning	.01	.66	.01	.991
Opportunities for impact	1.93	.64	3.01	.003
Work-program relevance	1.06	.45	2.39	.018
Appropriate compensation	.96	.47	2.03	.043
Organization size	.24	.44	.56	.580
Term number	-.48	.28	-1.72	.086

DISCUSSION

The development of students' organizational commitment is important to employers and educators alike. Traditionally, the quality of students' work experiences—defined in terms of learning, impact, and relevance—was thought to be a central antecedent of such commitment in WIL programs (Drewery et al., 2019). Yet, relational dynamics between students and others are also relevant to students' organizational commitment (Pennaforte & Pretti, 2015). The results of this study suggest that relational dynamics (in terms of workplace friendships) may be an aspect of work experience quality that influences organizational commitment.

The mean of the workplace friendship instrument suggests that many students developed close friendships at work. Recall that the data in the study were collected during the ongoing COVID-19 pandemic. In that context, most students worked remotely, not in close physical proximity to others. Despite working remotely, workplace friendships emerged. This is consistent with earlier research that suggests physical proximity is not a necessary condition for workplace friendships (Sias et al., 2012). This suggests that WIL students may develop workplace friendships even when students and others are not physically together.

Further, scores on the workplace friendship instrument were positively associated with students' reports of a psychological bond with their organization. This is consistent with previous research on the

link between workplace friendships and organizational commitment among more permanent employees (Nielsen et al., 2000). The present research demonstrates that workplace friendships are important to organizational commitment even in the context of a contingent workforce comprised of WIL students. Even though WIL students join organizations for only a brief time, the friendships they develop at work may strengthen their relationships with employers.

As well, and perhaps most importantly, the results suggest that workplace friendships contribute to organizational commitment above and beyond the contribution made by other aspects of work experience quality. Consistent with previous research (Drewery et al., 2019), the greater the quality of the work experience, the stronger the bond between student and organization. Opportunities for making a meaningful contribution to the organization seemed central to the relationship between quality and commitment. Fair compensation, too, was important. Even after such factors are considered, workplace friendship can contribute to the bond between student and organization. This might suggest a greater need to conceptualize relational dynamics as an aspect of work experience quality in WIL programs.

These results are cross-sectional and based on self-reports. Future research is needed to better understand the relationship between relational dynamics and organizational commitment. Still, the results offer implications for WIL stakeholders to better achieve their goals. When employers offer opportunities for the development of workplace friendships, they might develop stronger relationships with students with implications for talent retention and conversion. Employers might partner students with others in shared tasks and highlight interpersonal similarities between students and others (Sias & Cahill, 1998; Sias et al., 2012). Because employers' goals are important to program sustainability, WIL educators could help students build skills for developing workplace friendships. Such skills might include humor, perspective-taking, and other communication-related competencies (Sias & Cahill, 1998).

REFERENCES

- Allen, N. J., & Meyer, J. P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, 63, 1-18.
- Drewery, D., Church, D., Pretti, J., & Nevison, C. (2019). Testing a model of co-op students' conversion intentions. *Canadian Journal of Career Development*, 18(1), 33-44.
- Drewery, D., Nevison, C., Pretti, T. J., Cormier, L., Barclay, S., & Pennaforte, A. (2016). Examining the influence of selected factors on perceived co-op work-term quality from a student perspective. *Asia-Pacific Journal of Cooperative Education*, 17(3), 265-277.
- Fleming, J., Mclachlan, K., & Pretti, T. J. (2018). Successful work-integrated learning relationships: A framework for sustainability. *International Journal of Work-Integrated Learning*, 19(4), 321-335.
- Meyer, J. P., & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review*, 1(1), 61-89.
- Nielsen, I. K., Jex, S. M., & Adam, G. A. (2000). Development and validation of scores on a two-dimensional workplace friendship scale. *Educational and Psychological Measurement*, 60(4), 628-643.
- Pennaforte, A., & Pretti, T. J. (2015). Developing the conditions for co-op students' organizational commitment through cooperative education. *Asia-Pacific Journal of Cooperative Education*, 16(1), 39-51.
- Sias, P. M., & Cahill, D. J. (1998). From coworkers to friends: The development of peer friendships in the workplace. *Western Journal of Communication*, 62(3), 273-299.
- Sias, P. M., Pedersen, H., Gallagher, E. B., & Kopaneva, I. (2012). Workplace friendship in the electronically connected organization. *Human Communication Research*, 38(3), 253-279.

- Wombacher, J. C., & Felfe, J. (2017). Dual commitment in the organization: Effects of the interplay of team and organizational commitment on employee citizenship behavior, efficacy beliefs, and turnover intentions. *Journal of Vocational Behavior, 102*, 1-14.
- Zeffane, R. (1994). Patterns of organizational commitment and perceived management style: A comparison of public and private sector employees. *Human Relations, 47*(8), 977-1010.

Extending our understanding of work experience quality: The LIRN model

DAVID DREWERY

T. JUDENE PRETTI

ANNE-MARIE FANNON

University of Waterloo, Waterloo, Canada

INTRODUCTION

Understanding the quality of students' work experiences is essential to developing exceptional work-integrated learning (WIL) programs. After all, "WIL is understood as student *experiences of work within curriculum* [...]" (Campbell et al., 2021, p. 508, emphasis in original). Years ago, Drewery et al. (2015) offered a conceptual model of work experience quality that included three components: learning (the extent to which the student developed competencies), impact (the extent to which the student contributed at work), and relatedness (the extent to which the work experience was connected to the student's academic program and career goals).

We argue that this conceptualization is incomplete because it overlooks relational dynamics that are important to most work experiences. Such dynamics are central to most daily work experiences and have important implications for students' development (Bridgstock et al., 2019; Rowe et al., 2012) and employment (Heffner & Rentsch, 2001). For example, the quality of interactions between students and supervisors may influence what students learn from their work experiences (McRae, 2014). Indeed, social interaction at work has always been foundational to our understanding of WIL (Eames & Cates, 2011). This suggests that an added focus on relational dynamics would improve our understanding of the quality of WIL work experiences.

This article extends our understanding of work experience quality in WIL programs. It integrates previous research (Drewery et al., 2015) and the concept of relational dynamics into the "LIRN" model (an acronym for its four components: learning, impact, relevance, and networking). The sections below are organized as follows. First, we review the concept of work experience quality. Second, we present and describe the LIRN model. Third, we apply the LIRN model to a dataset containing co-operative education students' descriptions of their "best" work experiences to explore the prevalence of LIRN components in high-quality work experiences. Results of the exploratory analyses are then presented and discussed in relation to the WIL literature.

Work Experience Quality

Work experiences are common to all WIL programs. They are those moments in which students participate in work situated in "real" work settings (which can be physical or virtual), typically those that include an employer or community partner and have "real" consequences for others (Kaider et al., 2017). Whether labelled internships, co-operative education work terms, or the like, work experiences are defining features of WIL programs.

The quality of such work experiences refers to what the student “takes away” from participating in work. This perspective is consistent with understandings of experience quality in other contexts. Whether in an academic course or at a restaurant, experience quality depends on a subjective evaluation of events and how they affect the individual (Duerden, 2021). For example, the quality of a vacation experience might involve evaluations of how the trip strengthened family ties or provided a renewed sense of well-being. Likewise, the quality of students’ work is an evaluation of how the work contributed to desirable outcomes and/or transformed the individual.

As mentioned earlier, Drewery et al. (2015) identified three components of work experience quality: learning, impact, and relatedness (which we refer to as “relevance”). This conceptualization is intuitive. It suggests that high-quality work experiences are those in which students: (1) learn or develop new competencies, (2) make a positive contribution at work, typically to their employer or partner, and (3) build connections between their work, their academic training, and their career goals. However, it also seems incomplete. As already stated, it misses relational dynamics that are essential to individuals’ work experiences. Consider that WIL students often seek connections to others at work, and that such connections have implications for development (Jackson et al., 2021). For this reason, we argue in favour of a new model of work experience quality that includes some attention to relational dynamics at work.

The LIRN Model

Integrating the concept of relational dynamics into the previous conceptualization of work experience quality (Drewery et al., 2015) results in what we call the LIRN model. Table 1 provides a description of its four components (learning, impact, relevance, and networking) in the model. The first three components were already described by Drewery et al. (2015). We added a fourth component, networking. Networking refers to the quality of social interactions between students and others at work. It may refer literally to students’ networks, such as when they develop important contacts within a given industry. Alternatively, it can refer to positive and supportive relationships with supervisors and other colleagues, such as when the student feels that they are an integral part of a team.

TABLE 1: Descriptions of components in the LIRN model of work experience quality

Component	Description
Learning	The extent to which learning was involved in the experience. Refers to both the development of new competencies (knowledge, skills, sense of self) and the application of competencies (i.e., experiential learning)
Impact	The extent to which the student made a positive/meaningful impact on the organization. Associated with comparatively higher levels of responsibility (e.g., autonomy, authority, decision-making).
Relevance	The extent to which the experience was connected to students’ academic program and their career goals. Strongest when the student sees a clear “link” between their training, the work experience, and their career trajectory.
Networking	The extent to which social dynamics were positive and supportive. Exemplified in perceptions of support from others and feelings of social acceptance/integration. Can also refer literally to effects of the experience on strength of social network ties.

METHOD

We explored the extent to which the LIRN model was associated with students' perceptions of high-quality experiences. To do that, we applied the LIRN model to descriptions of students' "best" work experiences. The concept of best refers to something that is of superior quality. As such, exploring such descriptions may reveal much about the components of experience quality. Seventy-five co-operative education students at the University of Waterloo participated in a study of work experience quality. Students in this program complete four to six four-month work terms as part of their degree requirements. As part of the study, they were asked to report the job titles and organization names for each of their previous co-op work experiences. Then, they were asked to identify which work experience was their best one and provide a brief explanation for their selection. Our interest was in the descriptions offered by those students who had more than one previous work experience ($n = 58$). Such descriptions (see Table 2 for examples) were coded by the first author and two research assistants using the LIRN model. When a given component was present it was coded with a "1" and when it was absent it was coded with a "0". The question we sought to address was: *to what extent is the LIRN model present in descriptions of students' best work experiences?*

RESULTS

Table 3 presents the interrater reliability statistics for each component of the LIRN model. For each component, two statistics are presented, Fleiss' Kappa (Fleiss, 1971) and Krippendorff's alpha (Krippendorff, 2004). Both are appropriate because they offer information on the reliability of nominal ratings provided by two or more raters. A Fleiss' kappa of .61 and a Krippendorff's alpha of .67 (but preferably above .80) indicates acceptable reliability (Krippendorff, 2004; Landis & Koch, 1977). Each statistic is presented with a 95% confidence interval in brackets. The results suggest that the codes had sufficient interrater reliability. In instances where codes differed between raters, the codes deferred to those originally assigned by the first author.

TABLE 2: Example descriptions of and codes applied to "best" work experiences

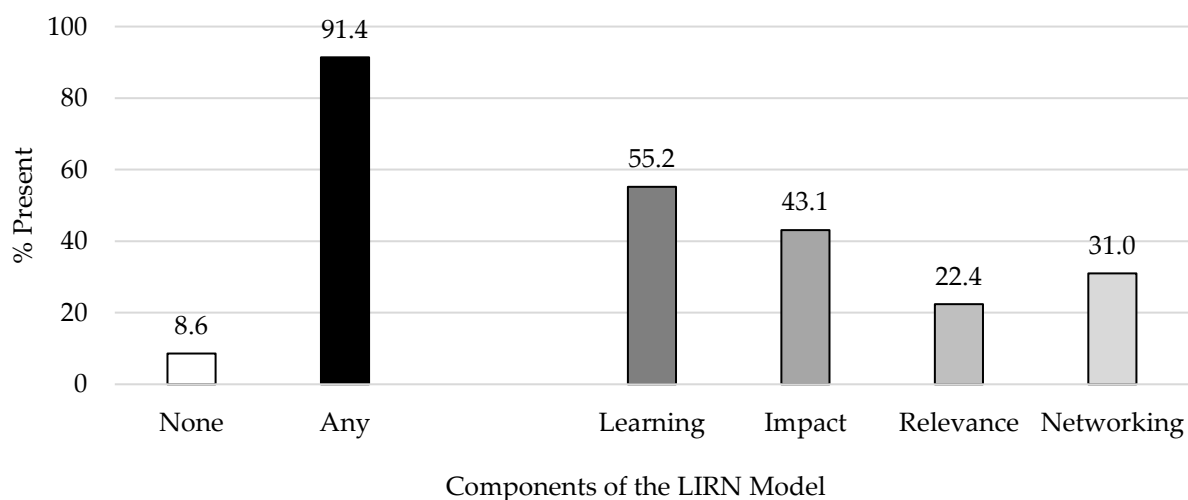
Description	Learning	Impact	Relevance	Networking
My best work term was WT2. I was able to do work that strongly aligned with my mathematics course at [institution] and got to use a variety of new software and improve my technical abilities. It was best because it advanced my career in the direction I want to go the most.	1	0	1	0
[Organization] was my best work term because I played a valuable and active role in their EMR Implementation projects. I got to see the project go through from planning to optimization and completement [sic]. It is the most relevant to my studies.	0	1	1	0
[...] the position helped me the most out of all work terms. I got a great deal of skills in different areas as well as connections and good personal relationships.	1	0	0	1

TABLE 3: Interrater reliability statistics for three raters for the components of the LIRN Model

Statistics	Learning	Impact	Relevance	Networking
Fleiss Kappa	0.65 [.50, .80]	0.74 [.59, .89]	0.75 [.60, .90]	0.84 [.69, .99]
Krippendorff's alpha	0.66 [.54, .76]	0.74 [.63, .83]	0.75 [.61, .88]	0.84 [.74, .91]

Figure 1 shows the percentages of descriptions that included at least one component of the LIRN model and the percentage of descriptions that included each component of the model. The results suggest that most descriptions (53 of 58, 91.4%) included at least one component of the LIRN model. Only five descriptions (8.6%) did not include any component of the LIRN model. Of those, all mentioned affective responses to the work experience (e.g., "I preferred my first work term over my second [...] It was less stressful and easy going the first time."). Of the components of the LIRN model, learning was mentioned most often (32 of 58, 55.2%), followed by impact (25 of 58, 43.1%), networking (18 of 58, 31.0%), then relevance (13 of 58, 22.4%). Of note, 40 of the 58 descriptions (69.0%) did not include networking. This suggests that Drewery et al.'s (2015) conceptualization of work experience quality was not inaccurate. However, as mentioned, nearly one third of descriptions did include networking. More than that, two of the 58 descriptions (3.4%) including only the networking component. This suggests that dynamics related to networking provide some understanding of work experience quality.

FIGURE 1: Percentages of presence of LIRN model in descriptions of best work experiences ($n = 58$).



DISCUSSION

We explored students' descriptions of their best work experiences to identify components of work experience quality. Consistent with previous research (Drewery et al., 2015), we found that learning, impact, and relevance are essential features of high-quality work experiences. In over two thirds of cases, students described experiences of developing new skills, making positive contributions at work,

and forging connections between their job, their academic training, and careers. This deepens our understanding of the importance of these three factors to the quality of students' work experiences.

Further, this article demonstrates the importance of relational dynamics (labelled "networking") to students work experiences within WIL programs. Nearly one third of students asked to describe their best work experiences mentioned something related to networking. They wrote about positive interactions, mentors, and building relationships with important others in industry. This suggests that the previous conceptualization of work experience quality (Drewery et al., 2015) was incomplete.

Collectively, these results suggest the usefulness of the LIRN model to understanding the quality of students' work experiences within WIL programs. Drewery et al.'s (2015) previous conceptualization of work experience quality aligned well with students' descriptions of best experiences, but the LIRN model provided an even better understanding of such experiences. This suggests that the LIRN model could be a useful conceptual model in future research. It could inform the direction of studies that seek to understand WIL work experience quality.

Perhaps more importantly, the LIRN model could help WIL stakeholders create exceptional work experiences. It is easy to remember and directs attention to the most salient features of students' work experiences. Educators might present the model of employers who can then apply to model to their own practices. Educators might also communicate to employers the importance of creating exceptional work experiences to outcomes such as students' organizational commitment (Drewery et al., 2019).

REFERENCES

- Bridgstock, R., Jackson, D., Lloyd, K., & Tofa, M. (2019). Social connectedness and graduate employability: Exploring the professional networks of graduates from business and creative industries. In R. Bridgstock & N. Tippett (Eds.), *Higher education and the future of graduate employability* (pp. 70-89). Edward Elgar Publishing.
- Campbell, M., Russell, L., Thomson, K., Tunny, R., Smith, L., & McCallister, L. (2021). The construction and testing of a framework to assure the institutional quality of work-integrated learning. *International Journal of Work-Integrated Learning*, 22(4), 505, 519.
- Drewery, D., Church, D., Pretti, J., & Nevison, C. (2019). Testing a model of co-op students' conversion intentions. *Canadian Journal of Career Development*, 18(1), 33-44.
- Drewery, D. & Pretti, J., & Pennaforte, A. (2015, August). *Conceptualizing the quality of cooperative education work term experiences: An exploration from the students' perspective*. Paper presented at WACE World Conference on Cooperative & Work-integrated Education: Kyoto, Japan.
- Duerden, M. D. (2021). Experience design and the origins and aims of leisure studies: Shifting the focus from context to experience. *Journal of Leisure Research*. <https://doi.org/10.1080/00222216.2020.1867019>
- Eames, C., & Cates, C. (2011). Theories of learning in cooperative and work-integrated education. In R. K. Coll, & K. E. Zegwaard (Eds.) *International handbook for cooperative and work-integrated education: International perspectives of theory, research and practice* (pp. 41-52). World Association for Cooperative Education.
- Fleiss, J. L. (1971). Measuring nominal scale agreement among many raters. *Psychological Bulletin*, 76(5), 378-382.
- Heffner, T. S., & Rentsch, J. R. (2001). Organizational commitment and social interaction: A multiple constituencies approach. *Journal of Vocational Behavior*, 59(3), 471-490.
- Jackson, D., Shan, H., & Meek, S. (2021). Enhancing graduates' enterprise capabilities through work-integrated learning in co-working spaces. *Higher Education*, <https://doi.org/10.1007/s10734-021-00756-x>
- Kaider, F., Hains-Wesson, R., & Young, K. (2017). Practical typology of authentic work-integrated learning activities and assessments. *Asia-Pacific Journal of Cooperative Education*, 18(2), 153-165.
- Krippendorff, K. (2004). *Content analysis: An introduction to its methodology*. Thousand Oaks, California: Sage.
- Landis, J.R., & Koch, G.G (1977). The measurement of observer agreement for categorical data. *Biometrics*, 33(1):159-74.
- McRae, N. (2014). *Exploring conditions for transformative learning in work-integrated education*. <http://hdl.handle.net/1828/5284>
- Rowe, A., Mackaway, J., & Winchester-Seeto, T. (2012). 'But I thought you were doing that' – Clarifying the role of the host supervisor in experience-based learning. *Asia-Pacific Journal of Cooperative Education*, 13(2), 115-134.

Use of an artificial intelligence-based résumé critique product and co-operative education students' job search outcomes

DAVID DREWERY

JENNIFER WOODSIDE

KRISTEN EPEL

University of Waterloo, Waterloo, Canada

INTRODUCTION

Work-integrated learning (WIL) programs have grown tremendously in recent years. While such growth represents opportunities for student development, it also places great strain on the services that support WIL students. Many career services are challenged to create capacity to meet WIL student demand. Résumé critique services are especially busy supporting WIL students. Indeed, they are among the most popular career services (Gallup, 2016; Makela et al., 2014) perhaps because résumé quality is linked to job search outcomes (Shore et al., 2021). It is no surprise then that résumé critiques offered by trained staff can enhance students' employability (McDow & Zabrocky, 2015). As more students participate in WIL and seek guidance on résumé writing, career services may struggle to meet student demand.

Consequently, many career services administrators are considering other ways to offer résumé critiques. Some consideration has been given to artificial intelligence-based (AI) résumé critique products. Such products are now widely available and may be appealing because of their ease of access and scalability. Whereas résumé critiques have traditionally relied on staff resources and schedules, AI-based résumé critique products can be accessed at times and places convenient to students. Also, they may be scalable in ways not typically possible with staff-driven services.

Yet, some are suspicious about the promises of AI-based products. Many individuals are wary about being assessed by AI and would prefer to receive feedback from trained staff (e.g., Nadarzynski et al., 2019). This is consistent with our research at the University of Waterloo (Drewery et al., *in press*) which found that adding an AI component to a staff-driven résumé critique did not enhance students' experiences. Instead, the addition of AI drew students' attention to the mechanics of their writing (e.g., grammar) and limited their thinking about how best to communicate their skills to employers. Alternatively, interactions with staff members may be more helpful in identifying students' strengths and passions which are critical to the job search process. Exploring students' use of AI-based résumé critique products could inform career services administrators' decisions about whether to introduce AI products to their students.

This study explored relationships between unsupervised use of an AI-based résumé critique product ("the AI") and selected job search outcomes among co-operative education (co-op) students at the

University of Waterloo. The study was situated between May and August 2020, a time when students sought guidance on their résumés in a remote setting (e.g., from their own living spaces). At that time, student needs and demands were high. In that context, the study seeks to understand which students might use the AI, how they might use it, and what that use might mean for their job search experiences.

METHOD

Context

The study was conducted in 2020 within the University of Waterloo co-op program. In that program, students typically transition between academic experiences and work experiences every four months. The transition process is a competitive one. Employers review students' job applications and make hiring decisions. Students' résumés are central to their job applications and typically influence employers' decisions. Therefore, this context represents one in which students might be interested in résumé critiques, perhaps those involving AI.

Participants

Participants were undergraduate co-op students enrolled in one of three academic programs: accounting and finance ($n = 29$), math ($n = 22$), and engineering ($n = 54$). They were participating in a job search process between May and August 2020 intending to secure employment for September 2020. Twenty-one (20.2%) participants were seeking their first co-op job during the study and the others had previous co-op job experience. Most (67.3%) participants were male and most (83.8%) were Canadian citizens. Participants were from the following ethnic groups: South or Southeast Asian (37.9%), Chinese (33%), White (18.4%), Korean (4.9%), Filipino (1%), Latin American (1%), West Asian (1%), and other (2.9%). On average, participants' childhood household income was between CAD\$75,000 and \$99,999.

Procedure

Weeks before the job search process began, we invited several hundred students to participate in a study of an AI-based résumé critique product. Those who agreed to participate in the study ($N = 105$) were asked to complete a questionnaire which was used to characterize the sample (see above) and explore who used the AI. Those who completed the questionnaire were offered unsupervised use of an AI-based résumé critique product. Participants could upload up to 10 résumés to the AI. They consented that the researchers could track selected AI use behaviors, such as the number of minutes participants spent using the AI and the number of résumés that they uploaded to it. Participants also consented to link such data to their institutional job search records, such as whether they were employed by the end of the study. Specifically, we examined three job search outcomes: number of interviews, number of days to the first interview, and the ratio of job applications to interviews. We reasoned that more attractive résumés would garner more interviews in a shorter period with fewer applications. Descriptive statistics were used to examine AI use and correlations were used to examine relationships between AI use and selected job search outcomes.

RESULTS

Artificial Intelligence Use

Table 1 summarizes participants' personal characteristics and AI use. Recall that participants could upload up to 10 résumés. Yet, of the 105 participants in the study, 38 (36.2%) uploaded at least one résumé to the AI and 19 (18.1%) uploaded multiple résumés. Not surprisingly, the more time participants spent logged in the AI, the more résumés they uploaded to it ($n = 38, r = .59, p < .001$). The AI assigns scores from 0 to 100 to each résumé. An examination of such scores suggested that on average the latest résumé participants uploaded was of significantly greater quality than the first résumé they uploaded, $t(18) = 6.04, p < .001$. Further, the more résumés participants uploaded, the greater their improvement in résumé score ($n = 19, r = .63, p = .004$). Thus, there is some evidence that greater use of the AI may be associated with improvements in résumé quality. The only significant association between personal characteristics and AI use was between the number of previous work terms and the number of résumés uploaded. The more work terms students completed, the fewer résumés they uploaded.

TABLE 1: Selected descriptive statistics and correlations between personal characteristics and AI use

Personal Characteristics	AI Use				
	Number of Minutes Logged in	Number of Résumés Uploaded	First Résumé Score	Latest Résumé Score	Résumé Score Improvement (First to Latest)
1. Male	--	--	--	--	--
2. Canadian	--	--	--	--	--
3. SES	--	--	--	--	--
4. Work terms	--	-.40*	--	--	--
<i>n</i>	39	39	38	19	19
<i>M</i>	47.49	2.46	66.00	78.37	13.89
<i>SD</i>	67.44	2.19	8.54	9.56	10.03
Min to max	1 to 347	0 to 10	51 to 91	63 to 96	-1 to 26

Note: * $p < .05$; -- indicates not statistically significant at $p < .05$; SES = socioeconomic status (measured as childhood household income)

Artificial Intelligence Use and the Job Search

Table 2 summarizes participants' AI use and job search outcomes. The result suggest that none of the AI use variables were associated with the number of interviews participants received, the timing of those interviews, or the ratio between the number of job applications they submitted to job interviews that they received.

DISCUSSION

We explored how participants used an AI-based résumé critique product during a competitive co-op job search and the relationships between such use, participants' characteristics, and selected job search outcomes. Roughly one-in-three participants uploaded a résumé to the AI and roughly one-in-five uploaded multiple résumés to the AI. Given that offering such AI-based products come at a financial cost, career services administrators should consider whether this level of uptake justifies the investment.

TABLE 2: Selected descriptive statistics and correlations between AI use and job search outcomes

AI Use	Job Search Outcomes		
	Number of Job Interviews	Days to First Job Interview	Ratio of Applications to Interviews
Number of minutes logged in	--	--	--
Number of résumés uploaded	--	--	--
First résumé score	--	--	--
Latest résumé score	--	--	--
Résumé score improvement (first to latest)	--	--	--
	<i>n</i>	105	41
	<i>M</i>	1.91	21.71
	<i>SD</i>	2.40	4.80
	Min - max	0 - 13	14 - 29
			3.46 - 246

Note: -- indicates not statistically significant at $p < .05$

We were interested in understanding who might use AI. Such information could be useful for organizing promotional campaigns for audiences that would benefit from résumé critiques but use them less often. We found that even while interest in AI came from students at different levels of study, use was highest among novice job seekers. Such job seekers uploaded more résumés than did their more experienced peers. This may suggest that where the perceived need to develop one's résumé is greatest, so too will there be greater use of an AI-based résumé critique product. If the goal is to encourage such use, administrators might seek to appeal to students with the least job experience.

There was evidence that using AI was an opportunity to improve the quality of students' résumés. Those who uploaded multiple résumés improved their scores by nearly 14 points, an increase of 21.6% from the first résumé they uploaded. Further, the more time that participants spent using the AI, the more résumés they uploaded. In turn, the more résumés they uploaded, the greater their improvement in résumé scores. If the AI scores are representative of recruiters' perspectives, then such improvement may be beneficial. After all, well-written résumés typically outperform poorly written ones (Shore et al., 2021).

However, and perhaps most important, the results suggest that use of the AI was unrelated to job search outcomes. Whether participants uploaded more (versus fewer) résumés or spent more (versus less) time working on and improving their résumés in the AI was unrelated to the number of invitations to job interviews received. This may reflect that the feedback provided by the AI was useful for improving some aspects of students' résumés and not others. Perhaps such AI products are limited to helping students with the mechanics of their writing. This is consistent with previous research (Drewery et al., *in press*). While good writing is more attractive to recruiters than bad writing (Shore et al., 2021), other factors may be more important to recruiters' responses to students' résumés. For example, students with more work experience tend to have more accomplishments to highlight on their résumés, and this may lead to greater job search success⁴. Use of the AI cannot change that some students have more experience

⁴ Indeed, the more experience participants had, the earlier their first job interview ($n = 41, r = -.33, p = .04$), the greater their likelihood of employment ($n = 104, r = .52, p < .001$), and (marginally), the greater their number of interviews per job application ($n = 97, r = .19, p = .058$).

or competency to offer in their résumés. This may explain why the use of AI was mostly underwhelming in this study.

CONCLUSION

As more students participate in WIL, the demand for career services such as résumé critiques will surely rise. Administrators of such services may want to consider alternatives to typical staff-driven résumé critiques. AI-based résumé critique products may, at first, seem appealing. Indeed, our results suggest that they may offer feedback that students can use to improve the quality of their résumé writing. However, if one is explicitly seeking to design an early intervention for students in greatest need of job search support, is a writing-oriented tool the best choice? The results suggest that such products may not influence students' success in a competitive job search. Administrators may also want to consider what could be lost by decreasing the connections that students have with career center staff, such as the potential for trust-building and raising awareness of other career services. There are also considerations with any AI software regarding how well it can meet the diversity of needs across the student body. Broader conversations with career educators have the potential to transform students' approaches to their job search and their employability. This may suggest, at least for the near future, that transitioning from staff-driven résumé critiques to AI-based ones may not be a clear-cut solution to addressing growing student demand.

REFERENCES

- Drewery, D. W., Woodside, J., & Eppel, K. (*in press*). Artificial intelligence and résumé critique experiences. *Canadian Journal of Career Development*.
- Gallup. (2016). *Gallup-Purdue index report: Great jobs. Great Lives. The value of career services, inclusive experiences and mentorship for college graduates*. <http://www.gallup.com/reports/199172/gallup-purdue-index-report-2016.aspx?ays=n>
- Makela, J. P., Seo, G., Sun, H., & Rooney, G. S. (2014). The value of using career services: A comparison of users and non-users. The Career Center, University of Illinois at Urbana-Champaign. <https://www.careercenter.illinois.edu/sites/default/files/downloads/NASPAReport-Value-FINAL.pdf>
- McDow, L. W., & Zabrocky, K. M. Effectiveness of a career development course on students' job search skills and self-efficacy. *Journal of College Student Development*, 56(6), 632-636. <https://doi.org/10.1353/csd.2015.0058>
- Nadarzynski, T., Miles, O., Cowie, A., & Ridge, D. (2019). Acceptability of artificial intelligence (AI)-led chatbot services in healthcare: A mixed-methods study. *Digital health*, 5, 2055207619871808. <https://doi.org/10.1177%2F2055207619871808>
- Shore, T., Tashchian, A., & Forrester, W. R. (2021). The influence of resume quality and ethnicity cues on employment decisions. *Journal of Business Economics and Management*, 22(1), 61-76. <https://doi.org/10.3846/jbem.2020.13670>

Introducing the global work-integrated learning modules: Global connectivity for practitioners

SONIA J. FERNS

Curtin University, Perth, Australia

JUDIE KAY

WACE, Australia/Canada

KATHARINE HOSKYN

Auckland University of Technology, Auckland, New Zealand

KARSTEN E. ZEGWAARD

University of Waikato, Hamilton, New Zealand

KRISTINA JOHANSSON

University West, Trollhättan, Sweden

NORAH MCRAE

University of Waterloo, Ontario, Canada

INTRODUCTION

As the focus on strengthening graduate employability intensifies for institutions, work-integrated learning (WIL) has become a strategic priority for higher education globally (Rowe & Zegwaard, 2017). The need for a highly skilled workforce to sustain the economy is driving mounting pressure to equip graduates with capabilities to navigate the volatile workplace and contribute to the social and commercial aspects of humanity (Dacre Pool et al., 2019). To achieve this imperative, staff with the capacity to design, deliver, and assess quality WIL learning experiences are essential. The concept of the Global WIL modules was driven by a pressing need for professional development globally as the profile of WIL grows and is increasingly a strategic priority for institutions worldwide (Zegwaard et al., 2019).

BACKGROUND

Professional development for staff to build capability for those involved in WIL is seen as a critical element of effective programs (Cooper et al., 2010; Patrick et al., 2014). Institutions and university networks have provided professional development, but the expansion of WIL has seen increasing demand for professional development for staff. National WIL Associations have played the major role in the provision of professional development in their countries and have played a crucial role in driving collaboration among the associations and with the World Association of Cooperation Education (WACE) to provide immediate support to the WIL community during this time (Rowe et al., 2022). The COVID pandemic was the catalyst for a swift transition to new WIL approaches, thereby intensifying the need for staff support (Kay et al., 2020).

The Global WIL Modules, first offered in 2015, set out to complement the professional development being offered in institutional and national settings by drawing together participants from across the

world to reflect and discuss important WIL themes from a global perspective. The intent was to enable participants unable to attend face-to-face international events, to access global professional development through online modules. For many participants, involvement in the modules was their first global experience. Participants contribute an administrative fee that covers the cost of processing applications and support for the Learning Management System (LMS). The design and facilitation of modules is undertaken voluntarily by the Global WIL Team.

The Global WIL modules evolved from a longstanding collaboration among a group of committed higher education professionals who collectively had extensive expertise on WIL. The Global WIL Team comprises six practitioners from four countries, and at the time were representatives of four national peak bodies for WIL: ACEN (Australia), WILNZ (New Zealand), CEWIL (Canada), and VILAR (Sweden). Success of the Global WIL Team can be attributed to the long term, collaborative relationships premised on mutual respect; a shared willingness to explore new ideas and expand Global WIL offerings; adopting a model of distributed leadership (Patrick et al., 2014) and international interactions.

ENHANCING GLOBAL STAFF CAPABILITY

As WIL offerings diversify and expand, the capabilities required of staff to design and deliver quality WIL are shifting (Kay et al., 2019). Enacting successful WIL programs where partnerships with external stakeholders are pivotal, and the design and execution of curriculum and assessment approaches integral, demands highly skilled staff with relevant expertise (Zegwaard et al., 2019). The desired capabilities differ from those required for the traditional university setting where typically 'teaching' is the focus as opposed to facilitating learning and empowering the learner via WIL methodologies (Zegwaard et al., 2022).

To identify gaps in staff capabilities and ascertain priority areas, a 24-item survey was administered via national WIL associations and WACE to capture data from participants from a range of international locations. Ethical approval was granted from the University of Waikato, New Zealand. The survey was initially distributed in 2018 and again in 2022 and affirmed demand for professional development globally with key topics identified as 'pressing professional development needs' by survey respondents (Zegwaard et al., 2019). This informed the focus and progression of the Global WIL Modules.

To date, five modules have been developed and delivered. The modules were launched in 2015 with *Global Perspectives in WIL*, a foundational module intended to enhance understanding of the relationship between WIL and learning theories. Given that industry engagement is imperative to WIL, *Industry Engagement for WIL* followed in 2017. This module provided participants with the skills to foster collaborative partnerships premised on reciprocity. As WIL evolved it became evident that the need to understand and ensure the quality of WIL became more critical. This focus on quality WIL was the catalyst for the *Dimensions of Quality for WIL* that explores the concept of WIL quality and encourages reflection on potential improvements to ensure quality of WIL programs. *Learning and Assessment in WIL* was first offered in 2020. This module considers assessment of authentic learning with insights about the nature of knowledge and learning, WIL pedagogy and the purpose of assessment. *Student Engagement* is the fifth module in the suite of offerings and was available for the first time in 2021. This

module highlights the importance of student engagement to successful WIL outcomes and investigates students' behavioral, emotional, and intellectual connection to their learning. A central theme of all modules is global connectivity and collaboration to broaden participants' perspectives.

MODULE DESIGN AND DELIVERY

Modules are designed to optimize the value of international collaboration and facilitate ongoing global networking for participants. Participants engage in both online synchronous and asynchronous discussions about topical issues relevant to the module. Reflection on the conversations and insights gleaned from readings and fellow participants, is critical for developing participants' self-awareness and reference to their practice.

The Global WIL Team works collaboratively to orchestrate a module descriptor and five action-oriented learning outcomes. To ensure modules are progressive and connected, learning outcomes are devised to complement knowledge and skills acquired in other modules. Once the module curriculum is confirmed, a module plan is developed that encompasses a week-by-week overview outlining module activities. Weekly activities comprise readings, reflections on readings, responding to peers' posts, online discussion questions, and webinars. Initially, two webinars were conducted for each module. In 2020, this was increased to three webinars in response to participants' feedback requesting more synchronous webinars as the opportunity to connect with colleagues from around the world was perceived as 'powerful' for their professional development. The duration of each module is eight weeks, with the final week dedicated to participants posting a reflection on their learnings and how they might adapt their future practice. To ensure continual improvement of modules and delivery, a pre- and post-survey is administered to participants. The Learning Management System is hosted by The University of Waterloo in Canada. Both the enhancement of technology over time and the increased ease and use of technology resulting from COVID -19 has enhanced the interactivity and engagement.

APPROACH

To ascertain the impact of the Global WIL modules, thematic analysis of participants' qualitative reflections completed by each participant at the end of each module was undertaken. A sample of 81 reflective comments were coded to identify frequently occurring themes evidencing the impact of the module on participants' professional capabilities. A second coder validated initial coding.

The question guiding the investigation was: What is the impact of participation in the Global WIL modules and the benefits of interacting with colleagues globally on participants' professional practice?

Participants

Initially the modules were restricted to members of the four National WIL Associations but were subsequently opened to all countries. Two hundred and five people from an increasingly diverse range of countries have now completed the modules. Australians and Canadians make up 43% and 39% respectively of completions to date. Table 1 outlines the number of participants from each country.

TABLE 1: Number of Global WIL participants by country

Country of the participant	Number of participants
Australia	91
Canada	83
New Zealand	15
Sweden	6
Vietnam	6
Singapore	1
Japan	2
USA	1
Total	205

Module Completion

Between 2015 and 2021, modules were offered 16 times with 263 completions, with some participants completing more than one module. Table 2 provides an overview of modules including the inaugural delivery of each module, the number of times offered, and the number of participants who completed each module.

TABLE 2: Delivery of modules and completions

	First offered	Number of times offered	Number of completions
Global Perspectives in Work-Integrated Learning	2015	6	107
Industry and Community Engagement for Work-Integrated Learning	2017	4	72
Dimensions of Quality for Work-Integrated Learning	2019	3	38
Learning and Assessment in Work-Integrated Learning	2020	2	27
Student engagement	2021	1	19
Total		16	263

THEMES EVIDENT IN PARTICIPANT REFLECTIONS

Analysis of participants' reflections revealed the six key themes including: Building global networks, Gaining global perspectives, Affirming WIL practice, Accessing global WIL research, Implementing new WIL strategies, and Space for reflections. Each theme is described below with examples of participants' reflections that capture the essence of the theme and highlight the impact of the Global WIL Modules.

Building Global Networks

Participants valued connecting with knowledgeable colleagues from around the world, learning from each other and developing a global network.

My favorite components of the Global WIL courses are the webinars and the ability to connect synchronously with many colleagues from around the world (Canadian participant).

Gaining Global Perspectives

A positive outcome for many participants was the perspectives and insights about how WIL works in different contexts globally, realized through participants' generosity, collegiality, and willingness to share.

... it has been a great experience to learn how WIL operates in more detail in other countries and contexts, and to meet other like-minded professionals who are passionate and engaged as myself (Australian participant).

Another excellent facet of this course was the engagement with and perspective drawn from diverse countries. Coming to understand different WIL practices and forms in the readings and engaging with perspectives from practitioners within those contexts provided good insights (Canadian Participant).

Affirming Work-Integrated Learning practice

Through sharing WIL practice and challenges, participants realized they were not alone in the challenges they faced and subsequently gained confidence in their practice.

It was nice to know that there are others who are experiencing all the complexity, nuance, challenges, and rewards that go along with WIL (Australian Participant).

Accessing Global Work-Integrated Learning Research

Accessing WIL research enabled participants to broaden their knowledge and underpin research to practice. Exposure to contemporary WIL research built confidence and reassurance in participants' practice.

This course has definitely helped to broaden my conceptual knowledge base of WIL and expose me to issues encountered by WIL practitioners in different countries (American Participant).

I feel empowered having access to the diverse research papers that can offer guidance or reassurance on almost all possible areas of WIL (Australian Participant).

Implementing New Work-Integrated Learning Strategies

Participants gained ideas and strategies that they planned to implement to enhance WIL practice in their institutions.

I'm finishing this module with some clearer ideas about how [] we can strategize more effectively to strengthen our current industry partnerships (New Zealand Participant).

There are so many more lessons that I have learned through this course and I believe that it could be a tool for me to brainstorm and map out more programs for our students (Vietnamese Participant).

I think it is remarkable outcome of participating in this module that I was able to complete the planning and application for a new internship course based on the knowledge from this module (Japanese Participant).

Space for Reflection

Participants valued the space to reflect and examine their WIL practice and viewpoints afforded through module participation. Opportunities to build global networks enabled a broader perspective.

The course has caused me to reflect on my own biases with respect to what matters in WIL (Canadian Participant).

Completing this module has made sure that I have made time each week to read relevant literature and the weekly discussion boards and webinars has provided me with valuable resources and comments on current best practice (New Zealand Participant).

The themes that resonated throughout the Global WIL participants' reflections highlight that the modules have a positive impact on professional development and participants benefit from creating and strengthening global networks. Connecting with colleagues globally enables a broader perspective of WIL practice, instills greater confidence in personal practice, and encourages participants to implement innovative WIL strategies. Importantly, the modules allow space for self-reflection, a critical aspect of professional growth and continual improvement.

CONCLUSION

Consistent interest in the modules validates the global applicability of topics and confirms the need for professional development. Thematic analysis of participants' reflections substantiate the value and impact of the Global WIL modules and highlight the professional benefits of global collaboration. Opportunities to build global networks facilitate a broader perspective on WIL and affirm participants' practice. Furthermore, enhanced awareness of research into WIL provides insight and encourages the adoption of innovative approaches to WIL. Space for reflection has proved to be a powerful enabler where participants have space to reflect on what they have learned and ascertain affirmative action for improving WIL practice.

The Global WIL Team is currently developing a capstone module in which participants design and enact a WIL project which consolidates their learning across modules. Upon completion of five modules and the capstone, participants are awarded a globally recognized certificate issued by WACE, in partnership with the Global WIL Team, as formal recognition of their achievements.

The success of the Global WIL modules is enabled through the voluntary contributions of six collaborative professionals with the support of national WIL associations, and the commitment of global practitioners worldwide to ensure quality WIL experiences for students. The aspiration is to grow and sustain the Global WIL suite of modules beyond where it is now and continue to enhance global professional development of WIL.

REFERENCES

- Cooper, L., Orrell, J., & Bowden, M. (2010). *Work integrated learning. A guide to effective practice*. Routledge.
- Dacre Pool, L., Gurbutt, D., & Houston, K. (2019). Developing employable, emotionally intelligent and resilient graduate citizens of the future. In A. Diver (Ed.), *Employability via higher education: Sustainability as scholarship* (pp. 83-97). Springer. https://doi.org/10.1007/978-3-030-26342-3_6

- Kay, J., Ferns, S., Russell, L., Smith, J., & Winchester-Seeto, T. (2019). The emerging future: Innovative models of work-integrated learning. *International Journal of Work-Integrated Learning, Special Issue, 20(4)*, 401-413.
https://www.ijwil.org/files/IJWIL_20_4_401_413.pdf
- Kay, J., McRae, N., Russell, L. (2020). Two institutional responses to work-integrated learning in a time of COVID-19. *International Journal of Work-Integrated Learning, Special Issue, 21(5)*, 491-503.
https://www.ijwil.org/files/IJWIL_21_5_491_503.pdf
- Patrick, C-j, Fallon, W., Campbell, M., Devenish, I., Kay, J., Lawson, J., Russell, L., Tayebjee, F., & Cretchley, P. (2014). Leading WIL: A distributed leadership approach to enhance work integrated learning. (Final Report).
https://ltr.edu.au/resources/LE11_2084_Patrick_Report_2014.pdf
- Rowe, A., Ferns, S., & Zegwaard, K. (2022). The future of Work-Integrated Learning: Visions and insights. In S.J. Ferns, A.D. Rowe, and K.E. Zegwaard (Eds.). *Advances in research theory and practice in work-integrated learning: Enhancing employability for a sustainable future*. (pp 251-268). Routledge.
- Rowe, A.D., & Zegwaard, K.E. (2017). Developing graduate employability skills and attributes: Curriculum enhancement through work-integrated learning [special issue]. *Asia-Pacific Journal of Cooperative Education, 18(2)*, 87-99.
- Zegwaard, K., Ferns, S., & Rowe, A. (2022) Contemporary insights into the practice of work-integrated learning in Australia. Editorial. In S.J. Ferns, A.D. Rowe, and K.E. Zegwaard (Eds.). *Advances in research theory and practice in work-integrated learning: Enhancing employability for a sustainable future*. (pp. 1-14). Routledge
- Zegwaard, K., Johansson, K., Kay, J., McRae, N., Ferns, S., & Hoskyn, K. (2019). Professional development needs of the work-integrated learning community. *International Journal of Work- Integrated Learning, Special Issue, 20(2)*, 201-217.
https://www.ijwil.org/files/IJWIL_20_2_201_217.pdf

Value and impact of an internship activity to increase awareness of and engagement with the UN's SDGs

SHABNAM SURJITSINGH IVKOVIĆ

NORAH MCRAE

University of Waterloo, Waterloo, Canada

BACKGROUND

Increasingly, higher education institutions (HEIs) are being measured on their contributions towards advancing the United Nation's Sustainable Development Goals (UN's SDGs) (THE, 2019). Institutionally, there is growing focus on graduating global citizens who can advocate for and operationalize sustainable futures in their professions (GUNI, 2019; Brugmann, Côté, et al., 2019; Kestin, Lumberras, et al., 2020). Within the University of Waterloo, SDG-related activity is being undertaken by a number of units. The Waterloo Professional Development Program (WatPD), whose mandate is to facilitate credit-eligible professional development courses during internships, and the Centre for Career Action, which provides internship recruitment and career support to the students, have put in place programming to further interns' understanding of and engagement with the SDGs. Sustainable Development Solution Network Canada (SDSN, 2020) is housed in the University's Faculty of Environment. The University's Sustainability Office delivers on the University's commitment to advancing sustainability. All of these supportive structures have created a robust ecosystem to contribute towards advancing the UN's SDGs. With over 24,000 co-op and WIL internships within this ecosystem, the Co-operative & Experiential Education unit wanted to better understand how these internships might better contribute to attaining the SDGs in deeper, more meaningful ways. Through its co-op and WIL programs, the University of Waterloo is ideally situated to educate employers and students to be more effective agents of change for advancing the UN's SDG agenda (UNESCO, 2017).

While historically, co-op internships have been tightly associated with outcomes related to employability and economic benefits (Drewery, Pretti, et al., 2020; Pretti & McRae, 2021), current interest is in furthering the impact of these internships to include the goals stated in the SDGs. The desire is to graduate students who have the awareness, the skills and the motivations to tackle significant global challenges (Boden & Nedeva, 2010; OECD, n.d.; WEF, 2020; United Nations, 2015). As a society, there is urgent need for graduates who can apply themselves to these complex global challenges.

Previous work by the authors established the need to increase awareness of and engagement with the UN's SDGs with both interns and supervisors (Ivkovic, et al., 2020) and identified a low-cost, low-resource conversation-based model to grow their engagement with the SDGs (Ivkovic & McRae, 2021). A key construct of this model is surveys sent to interns and supervisors at the end of their internships to measure their pre/post-activity awareness of the SDGs, self-reported impact on the SDGs, influence on their further academic and organizational direction with regard to staying engaged with the SDGs, and feedback on the activity instrument and process. This paper is a window into some of the key

outcomes of the value and impact of using this model as an activity during international internships undertaken in the Spring 2021 and Fall 2021 semesters.

METHODOLOGY

Table 1 below lists the questions in the internship activity's end-of-term survey to gather intern (student) and supervisor (employer) perceptions of the value and impact of the activity. Multiple choice questions (MCQ) have been used where possible for easier user experience, with an option called 'other' to capture additional thoughts from the respondents. All numerical scale questions have been designed on a scale of 1 (lowest) to 6 (highest), with 0 (not applicable), where relevant.

TABLE 1: Questions in the activity surveys sent to interns and supervisors at the end of the term

Area	Intern questions & type	Supervisor questions & type
Awareness	<ul style="list-style-type: none"> Familiarity / awareness of SDGs pre/post internship <i>{numerical scale}</i> Motivation to take action towards advancing the SDGs pre/post activity <i>{numerical scale}</i> 	<ul style="list-style-type: none"> Familiarity / awareness of SDGs pre/post internship <i>{numerical scale}</i> Motivation to take action towards advancing the SDGs pre/post activity <i>{numerical scale}</i>
Measurement of impact	<ul style="list-style-type: none"> Influence on working towards the SDGs <i>{numerical scale}</i> Self-reported impact on specific SDGs <i>{MCQ of SDG list}</i> Direct work with the SDGs <i>{numerical scale}</i> Amount of work that contributed to the SDG-driven activities of the organization <i>{numerical scale}</i> 	<ul style="list-style-type: none"> Influence of intern on working towards the SDGs <i>{numerical scale}</i> Self-reported impact on specific SDGs by the intern <i>{MCQ of SDG list}</i> Intern's contributions to the organization's sustainability, SDG advancement, and/or Corporate Social Responsibility (CSR) goals <i>{numerical scale}</i>
Influence on further direction	<ul style="list-style-type: none"> Likelihood of advancing the SDGs in the future <i>{numerical scale}</i> Connections between the SDGs and degree / academic studies <i>{MCQ}</i> 	<ul style="list-style-type: none"> Connections between the SDGs and future business direction <i>{MCQ}</i>
Feedback on engagement with the activity (instrument & process)	<ul style="list-style-type: none"> Motivations and challenges of participating in the activity <i>{MCQ}</i> Perceived benefits of the activity <i>{MCQ}</i> Feedback on the instrument <i>{MCQ}</i> 	<ul style="list-style-type: none"> Motivations and challenges of participating in the activity <i>{MCQ}</i>

In the design of the survey, guidelines provided by the institution's Office of Research Ethics (ORE) and Institutional Analysis and Planning (IAP) were followed. The Qualtrics platform hosting the surveys includes a tool that survey developers can use to check their survey for possible accessibility issues (Qualtrics).

KEY OUTCOMES

A disappointing observation was the very low response rate, and this despite letting students know about the survey and its importance at the onset of the activity, followed by repeated reminders:

- Supervisor survey: Spring 2021: n=11 (2.4%) | Fall 2021: n=2 (0.5%)
- Intern survey: Spring 2021: n=19 (4.2%) | Fall 2021: n=12 (2.7%)

Anecdotal evidence suggests that students might have good intentions to participate in the activity, but might not be following through until the very end due to heavy workloads during their internships. Also, it is possible that the SDGs do not have as great a focus in many international locations as economies struggle to rebalance after the pandemic. The researchers are considering options such as better communicating the value and impact the interns' work can have on the SDGs, introducing small incentives, etc.

Data Analysis

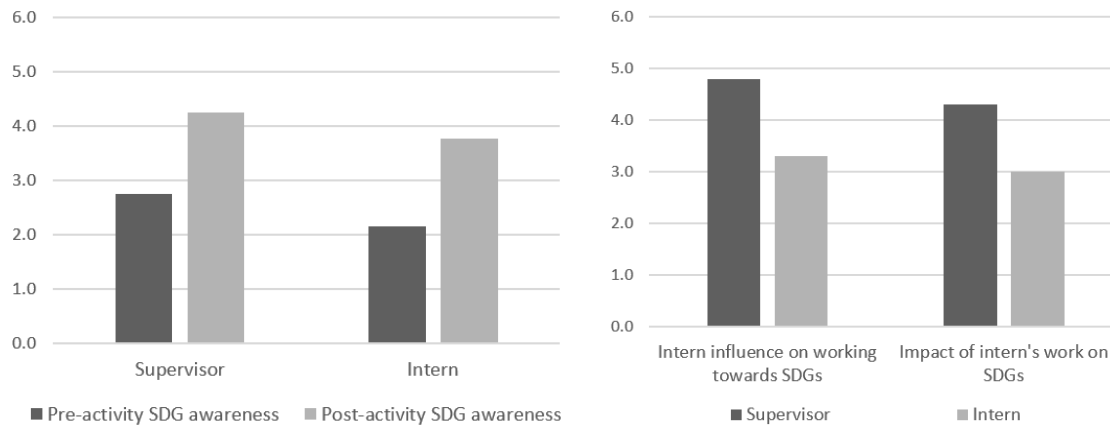
From the supervisor responses, the data showed that supervisors increased their awareness of SDGs from low to medium by an average of 1.5 points on a 6-point scale. Their pre-activity motivation to engage with the SDGs was at a medium level to begin with, and post-activity motivation showed a small increase of 0.2 points. The top reasons for engaging with the activity included seeing the learning value of the activity, something interesting to do with their intern, helping develop future best practices involving SDGs, and making a positive impact on behalf of the organization. Where organizations were engaged with the SDGs, while all SDGs were impacted across the respondent data, SDG 17 and 4 were identified as those where the students had the most influence and impact. Interns influenced the SDGs they were engaged with at an average level of 4.8 out of 6 – quite a significant level of impact to begin with (where the conditions allow, of course). Supervisors identified engagement with stakeholders – upstream and downstream of business chain – that support the SDGs as their primary point of focus for their future business direction.

From the intern responses, students also increased their awareness of SDGs from low to medium pre/post activity by an average of 1.7 points on a 6-point scale. Students reported higher levels of motivation (statistically significant increase of 1.2 points) in being engaged in the SDGs with the top reason being to make a positive impact on the world. The data showed rather low levels of influence and working directly with the SDGs at an average of 3 and 2.7 points. Again, while all SDGs were impacted across the respondent data, SDG 8, 4, 5 and 9 were identified as those where the interns felt they had made the most impact. Interns identified the highest benefit of the activity being increased knowledge of the SDGs, which led to many indicating a desire to apply SDGs in their future coursework, engage in campus activities, and seek future WIL terms related to the SDGs.

Other interesting outcomes of data analysis include the surprising discrepancy between intern and supervisor perceptions of what SDGs had been impacted by the intern's work. Given the urgency of the UN's SDGs calls to action, it was also a little disconcerting to note one of the top challenges reported with doing the activity that the intern's company does not focus on the SDGs; even a few organizations openly admitted this. There was a statistically significant increase in awareness among both supervisors

and interns about the SDGs post activity. Interns' awareness pre activity was lower than supervisors, and the results speak to a need for even further awareness-building prior to internships. (See Figure 1) Also, in as seen in Figure 1, supervisors had a much higher rating of intern's influence on working towards the SDGs and the impact of their work on the SDGs than the interns themselves.

FIGURE 1: Pre- and post-activity SDG awareness and intern influence and impact on the SDGs bar graphs



Interns' motivations to engage with the SDGs increased post activity by a statistically significant 1.2 points of 6, indicating that this activity of awareness-building and connecting the concepts to their work term experience can be a very powerful way to enhance SDG engagement in the future. And finally, both interns and supervisors indicated the exercise took too much time.

Updates to Activity

The data from these surveys informed several modifications to the activity itself. In upcoming iterations, connections to career purpose will be clarified (Woodside & McRae, 2022). Opportunities for mindful reflection of learning and impact will be provided in the interns' professional development courses they must take during their internships. Language of the instrument has been simplified. Also, short webinars to make the activity more reachable and user friendly will be scheduled.

CONCLUSIONS

The researchers set out with the goal to better understand how this activity impacts awareness of and motivation to engage with the SDGs, and to provide some concrete data on the actual impact that Waterloo's international internships might be having on the SDGs. Survey results demonstrated impact and value of the activity and indicate that it was worthwhile undertaking it.

This study has helped us develop a better understanding of the important contribution that raising awareness about the SDGs in both students and their supervisors can have on how students influence and impact progression towards the SDGs during their WIL work terms. This awareness building can be a mechanism to improve student and employer engagement during WIL work terms, and a driver for further exploration of the SDGs in subsequent academic and WIL terms. For institutions with SDG-

related intentions, leveraging WIL program activities can be a useful strategy to consider in addition to curricular programming and research.

However, in those cases where organizations do not have any explicit SDG interests, students' engagement is limited during those WIL terms. What remains to be seen is if the awareness that was built during these WIL terms translates into future purposeful seeking out of coursework and WIL terms that more strongly align with the goals of the UN's SDGs. Furthermore, the research raises the question of how to better motivate employers to care more about the SDGs.

FUTURE WORK

Future research, based in the axioms of quality WIL (McRae, Pretti, et al., n.d.), will be determined by obtaining more robust response rates to the surveys, splicing respondent data by faculty and level of interns, roles on their internships, industry area, etc., simplifying the engagement tools, scaling this activity across 24,000+ WIL experiences, and better integrating this initiative with ongoing requirements for WIL students. This is so it is seen as part of their program, rather than a stand-alone activity.

ACKNOWLEDGEMENTS

This work has received ethics clearance from the University of Waterloo's Office of Research Ethics (#44122). The authors acknowledge Bettina Wahl's contributions in formatting this document.

REFERENCES

- Boden, R., & Nedeve, M. (2010). Employing discourse: Universities and graduate "employability." *Journal of Education Policy*, 25(1), 37-54. <https://doi.org/10.1080/02680930903349489> (retrieved: 30 June, 2022)
- Brugmann, R., Côté, N., Postma, N., Shaw, E., Pal, D., & Robinson, J. (2019). Expanding student engagement in sustainability: Using SDG- and CEL-focused inventories to transform curriculum at the University of Toronto. *Sustainability*, 11(2), Article 530. <https://doi.org/10.3390/su11020530> (retrieved: 30 June, 2022)
- Drewery, D., Pretti, T. J., & Church, D. (2020). Contributions of work-integrated learning programs to organizational talent pipelines: Insights from talent managers. *International Journal of Work-Integrated Learning*, 21(3), 275-288. https://www.ijwil.org/files/IJWIL_21_3_275_288.pdf (retrieved: 30 June, 2022)
- GUNI – Global University Network for Innovation. (2019). Implementing the 2030 agenda at higher education institutions: Challenges and responses. https://www.guninetwork.org/files/guni_publication_-_implementing_the_2030_agenda_at_higher_education_institutions_challenges_and_responses.pdf (retrieved: 30 June, 2022)
- Ivkovic, S., & McRae, N. (2021). Improving engagement of interns and employers with the United Nation's Sustainable Development Goals. *International Journal of Work-Integrated Learning. Special Issue: The practice and research of cooperative education and work-integrated learning in the Canadian context*, 22(3), 345-356
- Ivkovic, S., McRae, N., & Church, D. (2020). Towards an assessment model of the impact of international internships on the UN's Sustainable Development Goals (SDGs). *Co-operative Education and Work-Integrated Learning Canada*. https://cewilcanada.ca/common/Uploaded%20files/Public%20Resources/Research%20Papers/5%20Ivkovic_McRae_Church_SDGs.pdf (retrieved: 30 June, 2022)
- Kestin, T., Lumbreras, J., & Cortés Puch, M. (2020). Accelerating education for the SDGs in universities: A guide for universities, colleges, and tertiary and higher education institutions. *Sustainable Solutions Development Network*. https://sga.unal.edu.co/fileadmin/user_upload/03_accelerating_education_for_the_sdgs_in_universities.pdf (retrieved: 30 June, 2022)
- McRae, N., Pretti, J., & Church, D. (n.d.). WIL quality framework. <https://uwaterloo.ca/centre-advancement-co-operative-education/research-publications/wil-quality-framework> (retrieved: 30 June, 2022)
- OECD – Organisation for Economic Co-operation and Development. (n.d.). The future of work. <https://www.oecd.org/future-of-work/> (retrieved: 30 June, 2022)
- Pretti, T. J., & McRae, N. (2021). Preparing gen y and z for the future of work through co-operative education: A case study on the University of Waterloo. In T. Gerhardt & P. Annon (Eds.), *Applications of work-integrated learning among gen z and*

- y students, (94-117), (IGI global book series Advances in educational technologies and instructional design), Hershey, PA: IGI Global. <https://doi.org/10.4018/978-1-7998-6440-0.ch005> (retrieved: 30 June, 2022)
- SDSN – Sustainable Development Solutions Network Canada. (2020). Advancing the SDGs in Canada. <https://uwaterloo.ca/sustainable-development-solutions-network-canada/> (retrieved: 30 June, 2022)
- THE – Times Higher Education. (2019). THE university impact rankings 2019: Methodology. <https://www.timeshighereducation.com/world-university-rankings/methodology-impact-rankings-2019> (retrieved: 30 June, 2022)
- UNESCO. (2017). Education for Sustainable Development Goals: Learning objectives. <https://unesdoc.unesco.org/ark:/48223/pf0000247444>
- ORE – Office of Research Ethics. (n.d.). <https://uwaterloo.ca/research/office-research-ethics> (retrieved: 30 June, 2022)
- IAP – Institutional Analysis and Planning. (n.d.). <https://uwaterloo.ca/institutional-analysis-planning/surveys> (retrieved: 30 June, 2022)
- Qualtrics. (n.d.). <https://www.qualtrics.com/support/survey-platform/survey-module/survey-tools/check-survey-accessibility/> (retrieved: 30 June, 2022)
- United Nations. (2015). Transforming our world: The 2030 agenda for sustainable development. <https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf> (retrieved: 30 June, 2022)
- Woodside, J., & McRae, N. (2022, in publishing). Purposeful Futures of Work: Developing Student Understanding and Agency through a Learning Ecosystem of Work-Integrated Learning and Career Education: A Case Study from the University of Waterloo. Accepted for publishing in the International Handbook of Co-operative & Work-Integrated Learning (new edition)
- WEF – World Economic Forum. (2020). The future of jobs report 2020. http://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf (retrieved: 30 June, 2022)

Global Challenge: An innovative work-integrated learning program connecting students across the globe

JUDIE KAY

World Association of Cooperative and Work-integrated Education , Melbourne, Australia

DAVE FENTON

University of Toronto Scarborough, Toronto , Canada

KARIMA RAMJI

University of Victoria, Victoria , Canada

SHABNAM SURJITSINGH IVKOVIĆ

University of Waterloo, Waterloo, Canada

INTRODUCTION

The globalized, knowledge-based economy has increased the demand for work-ready graduates possessing both interpersonal and technical skills (Dacre Pool et al., 2019; Sutherland & Symmons, 2013). The ability to work in multi-disciplinary teams and in a wide range of roles is also required to succeed in this rapidly changing landscape (Dean & Campbell, 2020; Sutherland & Symmons, 2013). Work-Integrated Learning (WIL) is a highly regarded pedagogical approach for helping students develop the skills to transition into the workplace (Kiriri, 2019). As a result, WIL programs have expanded around the world and diversified well beyond placement-based experiences (Dean & Campbell, 2020; Kay et al., 2019). In addition, international learning experiences increase students' social, economic, cultural, political, and intellectual benefits, while also making for better global citizens, with a higher degree of cultural intelligence (ACEN, 2015; Gribble et al., 2015; McRae et al, 2016; Mellors-Bourne et al., 2013; OECD, 2013; Rowe & Zegwaard, 2017). Increased demand has led to growth and innovation in WIL practice in higher education globally (Kay et al., 2019); however, the COVID-19 pandemic has redefined what a workplace entails and accelerated the development of diverse online and innovative WIL practices (Dean & Campbell, 2020, Kay et al., 2022). This paper explores the impact of one innovative international WIL program, Global Challenge, and the role virtual multidisciplinary experiences potentially play in equipping students to successfully enter a globally connected workforce. Although empirical research in this area is limited, this paper will contribute to new perspectives on the design and delivery of international quality WIL experiences done virtually by analyzing the outcomes and lessons learnt in delivering the Global Challenge to date.

The World Association for Co-operative and Work-Integrated Education (WACE) is a global professional organization that champions the development, growth, and advocacy for co-operative education and work-integrated learning (WACE Inc., 2022). Launched in 2020, in partnership with educational technology company Practera, WACE implemented an innovative pilot to enable students to connect globally to undertake WIL. Students from 9 WACE members in 8 countries worked in diverse virtual teams on transnational projects to solve an industry defined problem, assisting organizations to

contribute to the United Nation's Sustainable Development Goals (UN's SDGs). Building on the success of this initial pilot, WACE launched Global Challenge in 2021.

BACKGROUND

Global Challenge was in response to long-standing strategic goals, outlined in the WACE Global Charter (WACE inc., 2019), to broaden access to international experiences and address barriers many students face engaging in in-person mobility programs. The onset of the COVID-19 pandemic turbo-charged the implementation of this program to meet students' demand for alternate avenues to undertake international experiences

A critical factor in getting this initiative off the ground was piloting the concept with WACE members, experienced WIL universities, which provided valuable feedback. Partnering with an educational technology company that provided an established experiential learning platform also greatly contributed to the pilot's success. By February 2022, in addition to the pilot, WACE had run 3 Global Challenge programs involving 410 students from 31 institutions located in over 20 countries. Students who participated were from a wide range of disciplines from both undergraduate and postgraduate programs. Participating institutions provided Global Challenge to students as a co-curricular activity, but several offered it as a credit bearing component of their curriculum.

PROGRAM OVERVIEW

Global Challenge is a month-long WIL experience with an induction and orientation week, a three-week project for a client undertaken by multidisciplinary transnational student teams followed by client feedback and a reflection session. Students commit to a minimum of 30 hours over the 4 weeks including the induction, cross cultural and reflection sessions, a client meeting as well as team meetings. Design of the Global Challenge program was informed by quality WIL frameworks (McRae & Johnson, 2016; Smith et al., 2022) The platform utilized was an established Practera nano project linked to the UN's SDGs based on Kolb's Experiential learning cycle (Kolb, 1984). To enhance the quality of the learning, in alignment with WACE's focus on quality WIL, additional elements were included. A cultural intelligence workshop prior to commencement, an orientation session and a presentation and reflection session at program end were built into the program design. The reflection session encouraged students to actively reflect on and articulate the learning from their participation and consider the skills they could carry into their careers. WACE members provided the expertise and facilitated these additional elements.

The experiential learning platform provided a guide, resources, and skills videos to support students throughout the experience. The platform was contextualized for the WACE Global Challenge with additional resources added from feedback after each program. Students undertook a Global skills self-reflection based on the World Economic Forum (2016) 21st Century Skills pre and post program as well as providing peer review of team members. Industry clients were guided in formulating a project brief and were provided an orientation. The program included a workshop on developing and using intercultural effectiveness via the CQ model (Earley & Ang, 2003) for successful teamwork. The United Nations' Office of the Secretary-General's Envoy on Youth has stated that global competence in youth

is critical to achieve the SDGs (Hunter, n.d.); OECD's Programme for International Student Assessment (PISA) is clear that intercultural effectiveness is essential to the achievement of the UN's SDGs by the 2030 timeline (OECD PISA, 2018). The Global Challenge program has been designed to develop better global citizens, which is also a goal of the WACE Charter, through cultural intelligence and increasing student awareness of the UN's SDGs.

ENABLERS AND CHALLENGES

Implementing innovative WIL programs, especially multidisciplinary programs involving multiple stakeholders such as the Global Challenge, involves significant complexity presenting many considerations (Ferns et al.,2022). Enablers supporting implementation include an entrepreneurial approach, leadership support, preparation of stakeholders, students with a proactive mind set and project scope clarity for stakeholders (Kay et al., 2022; Ferns et al.,2022). Consistent with these studies, these enablers assisted in the successful implementation of Global Challenge. As Global Challenge was implemented by WACE, strong leadership support was provided to pilot this innovative program. WACE member institutions were very willing to trial this new concept. Students were selected and prepared through information provided to institutions. Clients were briefed and provided with project templates to ensure clarity around both their role and their project scope. A particular strength of the program has been the diversity of institutions, clients and project briefs involved, students being orientated and supported to participate proactively and the provision of team building exercises to build cultural intelligence and team cohesion.

Despite the program complexity, far fewer challenges have been encountered than had been anticipated. Some institutions reported that the timing of programs did not align with their academic calendars proving a barrier to participation and some institutions found resourcing the program problematic. Despite overwhelmingly positive student feedback, some students found participation a challenge due to lack of experience in juggling time zones with their team or have issues managing their workload over the short duration of the program. In a few instances, differing levels of past work experience and cultural differences impacted team cohesion and performance.

FINDINGS

Global Challenge from the initial pilot has produced positive outcomes for all stakeholders. There has been a high student retention in each program with student withdrawals usually linked to external factors such as illness, family emergency or workload issues. All students were surveyed for feedback at the conclusion of each Global Challenge and asked to self-reflect on the impact of their participation. The following outlines the outcomes from the Pilot, Global Challenge #1 #2 and # 3. Students report on whether their employability skills and social and professional networks have increased resulting from the Global Challenge experience. Outcomes have remained high and relatively consistent across each program as outlined in Table 1.

TABLE 1: Overview of Global Challenge programs including students Feedback

Program	No of students	Completion Rate	Increase in students' employability skills	Increase in social and professional networks
Pilot	40	83 %	82 %	80%
Global Challenge # 1	116	83 %	90 %	78 %
Global Challenge #2	102	83%	80 %	80 %
Global Challenge #3	152	88%	88 %	80 %

Students also report increased understanding of the UN's SDGs as well as providing positive feedback around the role the Cultural Intelligence workshop played in their preparation. After the first two programs a modified feedback survey was implemented to gain more specific information about what students in Challenge #2 and #3 believed they had gained from participation. The highest ranked items were *developed new skills* and *experience a professional work environment*. The following student comments provide further insights into their experiences:

It enhanced my team work especially since I was working with teammates from different cultures and different time zones. (Kenyan student)

I loved the opportunity to connect with students all around the world in a highly organized and thoughtful experience to gain real world experience working with a client and develop soft and hard skills. (Canadian student)

This global challenge has helped me tremendously in unlocking leadership skills I didn't know I had. (Indian Student)

Students also agreed that the feedback provided by clients was of high quality, timely and constructive. The percentage of students who stated this were: 88 % in the Pilot group, and 80 %, 70 % and 85 % in the other three Global Challenge Programs respectively indicating the value of engaging with clients from the student perspective.

Clients providing project briefs came from a broad range of industries across a diverse range of countries including Health Care, Tourism, IT, Manufacturing and Arts and Recreational services and were geographically dispersed. Clients agreed that the Final Report from the student teams was of a high or outstanding quality (83 %, 77 % and 84 % for Global Challenge #1 , #2 and #3 respectively). Many clients across all three programs agreed that the project has improved their business decision making or capability (70 %, 60 % and 79 % for Global Challenge #1, #2 and #3).

Motivating factors for involvement by Global Challenge industry and community clients reflect similar motivations for other WIL programs; wanting to connect with new talent, get new perspectives and ideas and bring forward project. (Phillips KPA,2014).

We are already implementing changes our group suggested for our (Client in New Zealand)

...the Project really helped us with a key area we always struggled in finding the time to prioritise (Client in China)

CONCLUSION

From a small pilot, Global Challenge has attracted extensive interest and grown significantly over a short timeframe to include institutions from 20 countries. Global Challenge has therefore been effective at enabling access to quality international WIL to a diverse range of students globally. Successful implementation can be attributed to a range of factors. Support from the global WIL community for an innovative WIL program that overcame a lack of international opportunities, due to the impact of the COVID-19 pandemic, was a key factor. Institutions participated believing the project based, multidisciplinary approach would better prepare their graduates for contemporary workplaces by developing a global mindset and capabilities. Incorporation of design elements such as the link to the UN's SDGs, transnational teams, use of an experiential learning platform, cultural intelligence workshop, self and peer reviews and reflection sessions provided rich learning for students. This program design, underpinned by WIL research and quality principles, maintained student engagement with students reporting increases in a range of skill and knowledge areas. Additionally, students valued the authentic industry experience, being challenged, gaining new perspectives and knowledge of other cultures. Clients also report gaining benefit for their organization from participation. Enhancements to the program continue based on stakeholder feedback. Further research into short virtual project-based WIL, like Global Challenge, to further explore the impact on students and their preparedness for a dynamically changing workplace is needed. Equally, research into client outcomes from such programs would provide valuable insights.

REFERENCES

- Australian Collaborative Education Network [ACEN]. (2015). The National WIL strategy. <http://acen.edu.au/wp-content/uploads/2015/11/National-WIL-Strategy-in-university-education-032015.pdf?x99824>
- Dacre Pool, L., Gurbett, D., Houston, K. (2019) Developing employable, emotionally intelligent, and resilient graduate citizens for the future. In A. Diver (ED.), *Employability via higher education: Sustainability as scholarship* (pp 83-97). 1st ed. 2019. Springer International Publishing; 2019. doi:10.1007/978-3-030-26342-3
- Dean, B. A., & Campbell, M. (2020). Reshaping work-integrated learning in a post-COVID-19 world of work. *International Journal of Work-Integrated Learning*, 21(4), 356-364.
- Ferns, S., Lewis, S., Russell, L., Childers, J. (2022) Designing and Implementing interdisciplinary project-based work-integrated learning. In S.J. Ferns, A.D. Rowe, and K.E. Zegwaard (Eds.). *Advances in research theory and practice in work-integrated learning: Enhancing employability for a sustainable future*. (pp 167-178). Routledge.
- Earley, P.C., & Ang, S. (2003). *Cultural intelligence: Individual interactions across cultures*. Stanford, CA.: Stanford University Press.
- Gribble, C., Blackmore, J., & Rahimi, M. (2015). Challenges to providing work integrated learning to international business students at Australian universities. *Higher Education, Skills and Work-Based Learning*, 5(4), 401-416. <https://doi.org/10.1108/HESWBL-04-2015-0015>

- Hunter, B. (n.d.) Global Competence Amongst Youth is Critical to Achieve Sustainable Development Goals. Retrieved March 23, 2021, from <https://www.un.org/youthenvoy/2015/07/global-competence-amongst-youth-critical-achieve-sustainable-development-goals/>
- Kay, J., Ferns, S., Russell, L., Smith, J., Younger, A., (2022) Innovation in Work Integrated - learning In S.J. Ferns, A.D. Rowe, and K.E. Zegwaard (Eds.). *Advances in research theory and practice in work-integrated learning: Enhancing employability for a sustainable future.* (pp 133-144). Routledge.
- Kay, J., Ferns, S., Russell, L., Smith, J., & Winchester-Seeto, T. (2019). The emerging future: Innovative models of work-integrated learning. *International Journal of Work-Integrated Learning, Special Issue, 20(4)*, 401-413. https://www.ijwil.org/files/IJWIL_20_4_401_413.pdf
- Kay, J., McRae, N., Russell, L. (2020). Two institutional responses to work-integrated learning WIL in a time of COVID-19. *International Journal of Work-Integrated Learning, Special Issue, 21(5)*, 491-503. https://www.ijwil.org/files/IJWIL_21_5_491_503.pdf
- Kiriri, P. N. (2019). An assessment of the quality of a work-integrated learning internship program in Kenya. *International Journal of Work-Integrated Learning, 20(3)*, 257-271.
- Kolb, D. (1984). *Experiential learning as the science of learning and development.* Englewood Cliffs, NJ: Prentice Hall.
- McRae, N., & Johnson, N. (2016). The development of a proposed global work-integrated learning framework. *Asia-Pacific Journal of Cooperative Education, Special Issue, 2016, 17(4)*, 337-348. https://www.ijwil.org/files/APJCE_17_4_337_348.pdf
- McRae, N., Ramji, K., Lu, L., Lesperance, M. Developing global-ready graduates: The CANEU-COOP experience. Khampirat, B., McRae, N. (2016). Developing global standards framework and quality integrated models for cooperative and work-integrated education programs. *Asia-Pacific Journal of Cooperative Education, 17(4)*, 377-386.
- Mellors-Bourne, R., Humphrey, C., Kemp, N. and Woodfield, S. (2013), *The Wider Benefits of International Higher Education in the UK*, Innovation and Skills Department for Business, UK Government, London.
- OECD (2013), *Education Indicators in Focus*, OECD, Paris.
- OECD PISA. (2018) *Preparing Our Youth for an Inclusive and Sustainable World: The OECD PISA Global Competence Framework.* Retrieved March 23, 2021 from <https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf>
- Phillips KPA. (2014). *Engaging employers in work integrated learning: Current state and future priorities.* <https://docs.education.gov.au/system/files/doc/other/phillipskpa-wil-research-report.pdf>
- Rowe, A.D., & Zegwaard, K. E. (2017). Developing graduate employability skills and attributes: curriculum enhancement through work-integrated learning. *Asia-Pacific Journal of Cooperative Education, 18(2)*, 87-99.
- Smith C., Ferns S., Russell.,(2022) A quality Framework for developing and assuring high quality work integrated learning curricula. In S.J. Ferns, A.D. Rowe, and K.E. Zegwaard (Eds.). *Advances in research theory and practice in work-integrated learning: Enhancing employability for a sustainable future.* (pp 107-120). Routledge.
- Sutherland K., & Symmons, M. (2013). Issues and challenges identified in the development of a broad multidisciplinary work-integrated learning package. *Asia-Pacific Journal of Cooperative Education, 14(4)*, 295-304
- WACE Inc. (2019). *CWIE Global Charter.* Retrieved March 18, 2022 <https://waceinc.org/global-wil-charter/>
- WACE Inc. (2022). What is Wace and CWIE? Wace Inc. Retrieved March 6, 2022, from <https://waceinc.org/what-is-wace-and-cwie/>
- World Economic Forum, *New Vision for Education Project 2016*

Improving graduate readiness through a project-based learning: Lessons from the multi-modality work-integrated learning case study

KNOWLEDGE PP MANANA

ANNIE MOLETSANE

Vaal University of Technology, Vanderbijlpark, South Africa

The presence of COVID-19 has caused an unexpected sudden and dramatic interruption in workplace and educational environments in South Africa and globally (Kay et al., 2020). On 26 March 2020 South Africa was introduced to Alert Level 5 COVID-19 regulations under the Disaster Management Act regulations to combat the spread of COVID-19. Under Alert level 5 all educational institutions, including universities, and “non-essential” businesses had to immediately cease operating (www.gov.za). The presence of COVID 19 and subsequent lockdowns had a negative bearing on university - industry relations, to a greater degree on the realm of Work-Integrated Learning (WIL). Students that were placed on Workplace-Based Learning (WBL) in office environment were impelled to work from home through online settings, while some companies halted operations altogether throughout the hard lockdown. This pattern could be seen in a number of countries abroad as well. Implication for WIL started to emerge as early as 1st February 2020 in Australia and March 13 for Canada, where 48% of students had lost 48% of their jobs (Kay, et al. 2020). This conundrum put a negative spin on graduation prospects for students and universities as some students struggled with operating in online distant settings while some were left without placement for a considerable period of time which led to a tougher competition for placement.

Innovative interventions were therefore required from universities WIL coordinators in order to deal with the quagmire that sought to tighten the already existing bottlenecks on graduation outputs. Innovation in WIL has been occurring gradually alongside similar ongoing changes in work practices (Dean & Campbell, 2020). Identified in the United Nations Sustainable development goals alongside quality of education, Innovation for higher education must be recognized attentively to address challenges such as competition for WIL placements, lack of relative companies and graduation bottlenecks (Kay et al., 2019). The Public Relations department in the Vaal University of Technology, in an effort to assist students with WIL placement, opted to supplement the Workplace-Based Learning(WBL) WIL modality with a Project-Based Learning (PBL) modality in form of a “campus tv” innovation.

This study came as a result of the above challenges and has an undertaking to assess the impact of innovative change within student placement with an aim of establishing if enabling a multimodality framework can improve graduate readiness. Students in this modality, who are respondents to this study, were asked to give their impression of the PBL modality they were involved in with a view of making a recommendation to Public Relations departments in other universities. The enquiry also

sought to understand if the innovation satisfied objectives and outcomes of a PBL. Zafirov (2013) described the following objectives and outcomes of a PBL:

- mentorship skills,
- Leadership skills,
- Self-directed learning skills,
- Ability to find and use appropriate resources,
- Critical thinking,
- Measurable knowledge base,
- Performance ability,
- Social and ethical skills,
- Self-sufficient and self-motivated, and
- Facility with computer.

Students are further exposed to an in-depth fundamental understanding of networking through interaction with industry-wide networks (Garlatova et al., 2013).

WIL, as an education and training strategy, ensures students are exposed to industry-like authentic learning experiences, ultimately enhancing graduates' competitive quality through provision of employability capabilities (Ferns et al., 2014). Consequently, an implementation of a quality industry-par class-based PBL modality can offer a wider experience to students and valuable tools to enable a WIL coordinator to tackle issues relating to non-placement. Project-Based Learning is a form of situated learning and it is based on a constructivist finding that students find a deeper of material when they effectively construct their understanding by working with and using ideas Krajcik and Blumenfeld (2006). In project-based learning, students work in groups to solve challenging problems that are authentic, curriculum-based, and often interdisciplinary. Learners decide how to approach a problem and what activities to pursue (Solomon, 2003). Krajcik and Blumenfeld (2005) further identified five key features of Project-Based Learning. However, pertinent to this study are the following two features:

1. Teachers and community members engage in collaborative activities to find solutions to the driving question. This mirrors complex social situation of problem-solving.
2. Students create a set of tangible products that address the driving question. These are shared artefacts, publicly accessible external representations of the class's learning.

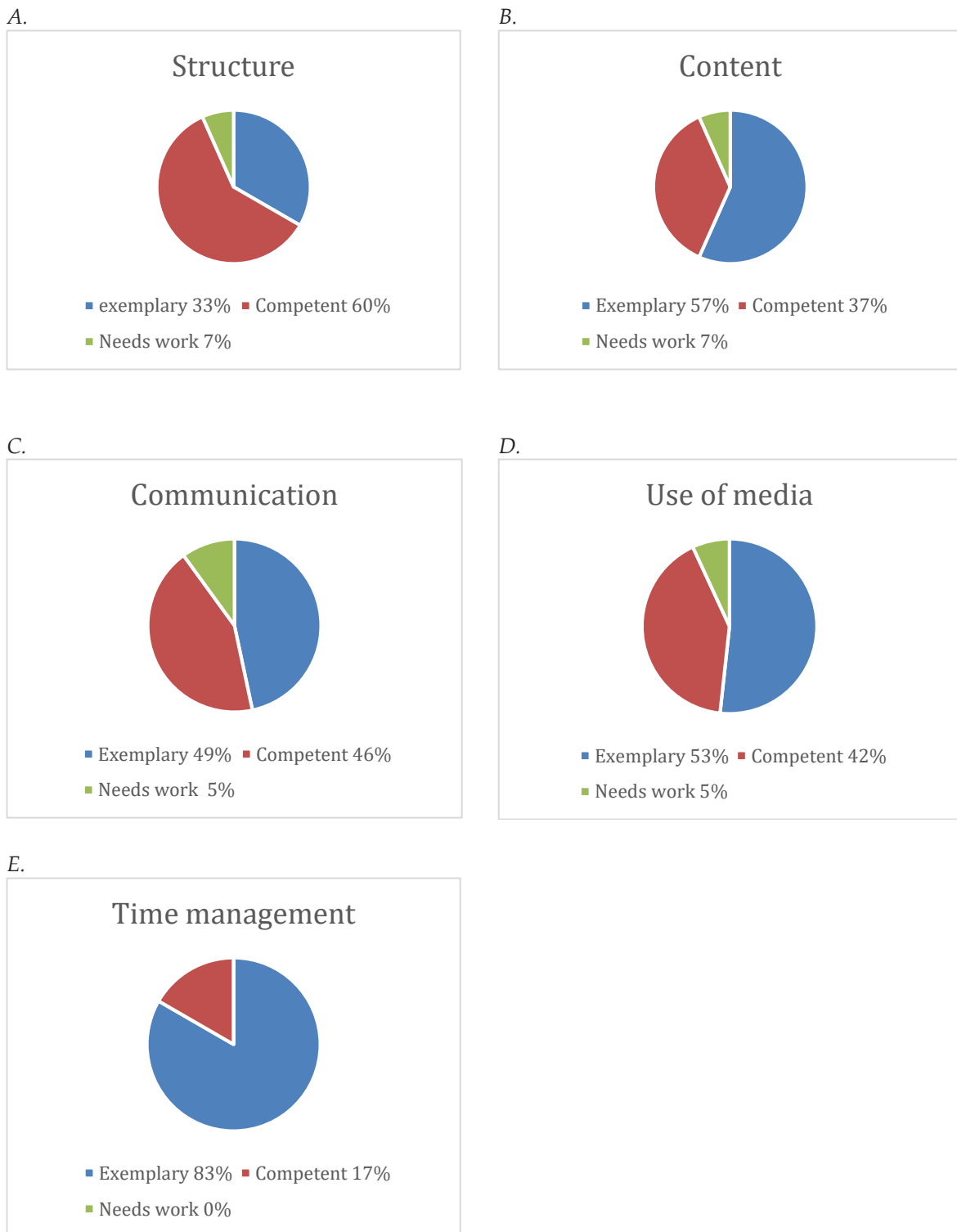
In essence, a Project based learning project should be community congruent and beneficial to core stakeholders of a community. It should afford an opportunity to students to entrench themselves into real-life industry-like problem-solving thereby turning the classroom into a dynamic workplace. The primary condition of this entrenchment is an entrapment with communal relations pointed towards an improved tangible resultant force, in this case a graduate with a competitive, tangible, and publicly accessible portfolio of evidence. Albeit this modality being both student-centred and teacher-centred, it requires mentorship that is competent with industry experience to impose a needed level of direction and substance (Wurdinger, 2016). Mentorship offers contextualises and collaborative learning. The potential of a learner materialise more rapidly if he/she with more knowledgeable people (Alexander et al., 2014)

During the previous WIL calendar year 90 WIL students were successfully registered with the department. Thirty students were placed in the new PBL modality. Seven had returned from industry because they had lost their jobs due to the impact of COVID-19. Twenty-five out of 30 had not been successful in obtaining placement and, as a result, were enrolled in the PBL modality. By the end of the 2021 calendar year all students placed in the PBL managed to complete their six months WIL tenure. Through interviews, questionnaires and observation an enquiry was made to establish the capability of this PBL to deliver the identified objectives and outcomes. The overall impression from students' perspective put an emphasis on the necessity of having more than one WIL modality in the department as an advantage. A multi-modality environment provided, first, options for students to choose an in-service training method that was convenient for them based on the extra skills that they wanted to acquire, which were not offered in the curriculum. Secondly, an opportunity to be mentored and subsequently become mentors to their colleagues through a rotational leadership structure. Also, mentorship overlapped to the newer group students that joined the PBL in the following year, through a skills-transfer program. Skills sharing between students emerged as a valued exercise where students capacitated each other with skills that are not offered in the public relations qualification such as software-based video editing, monetising through social media, show-hosting, making reels for Instagram, color-coding, content development and podcasting. All student that returned from industry expressed that the PBL offered more skills and knowledge in comparison to their previous placement. Further, students felt confident and ready for a real work environment, although some expressed frustrations of being side-lined in the cognitive process as their idea were sometimes rejected based on the assumption that they do not get along with other group members. Lack of teamwork was one of the identified challenged of PBL in this study.

A questionnaire survey based on students' understanding of PBL key focus areas which are structure, content, communication, use of media and time management delivered the following results (Figure 1)

Ninety three percent of the students understood their role within the structure of the project. Only two students found it difficult to synergise with the project structure. This was influenced by lack of coherence within group-work setting. The two students also displayed poor results in communicating their ideas and concerns which made it difficult to get along with other group members. On average, the above competency rate is above ninety-five percent which translates to an achievement of Zafirov's (2013) objectives and outcomes of PBL. Students had to assume and rotate within different leadership roles in the duration of the project cycle which enabled them to make an attempt at the outlined objectives and outcomes.

FIGURE 1: Students' understanding of PBL key focus areas



An observation was made pertaining to the number of students in class where lecturers that were observing and mentoring students recommended that the intake number should be reduced to 20 in future in order to give enough time and space to all interns to participate meaningfully and effectively in order improve the above competency rate. In contemplation of sustained consistency and dedication to mentorship a recommendation was further made that departments or universities should make stipends available for lecturers and post-graduate (or post-diploma) student mentors in order to provide support to WIL coordinators. This may help to bridge a potential gap in skills transfer between two generations. Further, an allowance in key performance areas should be made for lecturers that provide mentorship support to PBL implantation. Mentorship is a critical element of PBL for the reason that mentorship merges two generations and infuses different cultures into one synergised work aura (Alper, 2017). Furthermore, a recommendation for extra supplementary workshops is realised due to the fact that it is challenging to fit in new relevant material into the project curriculum in a timely manner (Shekar, 2014). It would benefit public relations management departments in other universities to implement a PBL modality alongside another WIL modality because it is conducive to solving non-placement challenges thereby consequently accelerating graduation outputs.

This study was limited to one department. Only students enrolled in the PBL modality were questioned. The enquiry could have involved opinions of students that are enrolled in the WBL. A future study can launch an investigation into the extent at which different universities reach in order to solve graduation backlogs caused by no-placement. And, further closely look into mentorship techniques employed by departments that have already adopted a PBL alongside another modality

WIL is an integral part of university curriculum as its offers students a practical industry like experience. An implantation of a multi-modality WIL program leads to a better success WIL output rate and offers options and diversity within the WIL structure. A PBL modality offers a dynamic option in a multimodality framework because a lot of objectives and outcomes can be achieved at once. If properly implemented and supported with good mentorship a PBL can produce tangible material to the benefit of all communal stakeholders thus increasing network capacity of students. Students in a PBL acquire and display more skills, confidence and readiness to join the industry because the can initiate a project and run it to completion.

REFERENCES

- Alexander, G., van Wyk, M. M., & Moreeng, B. B. (2014). Constructing student-teacher identities via a mentorship programme initiative: A case for school-based learning. *Mediterranean Journal of Social Sciences*, 5(9), 405-405
- Alper, P. (2017). *Teach to work: How a mentor, a mentee, and a project can close the skills gap in America*. Routledge.
- Dean, B. A., & Campbell, M. (2020). Reshaping work-integrated learning in a post-COVID-19 world of work. *International Journal of Work-Integrated Learning*, 21(4), 355-364.
- Ferns, S., Campbell, M., & Zegwaard, K. E. (2014). Work-integrated learning. In S. Ferns (Ed.), *Work-integrated learning in the curriculum* (pp. 1-6). Milperra, New South Wales, Australia: Higher Education Research and Development Society of Australasia Inc
- Gorlatova, M., Sarik, J., Kinget, P., Kymissis, I., & Zussman, G. (2013). Project-based learning within a large-scale interdisciplinary research effort. In *Proceedings of the 18th ACM conference on Innovation and technology in computer science education* (pp. 207-212).
- Kay, J., Ferns, S., Russell, L., Smith, J., & Winchester-Seeto, T. (2018). Innovative Models Of Work-Integrated Learning: Features, Enablers And Challenges. In *Refereed Proceedings Of The 3 Rd International Research Symposium On Cooperative And Work-Integrated Education, Stuttgart, Germany* (P. 95).

- Kay, J., McRae, N., & Russell, L. (2020). Two institutional responses to work-integrated learning in a time of COVID-19: Canada and Australia. *In International Journal of Work-Integrated Learning, 21*(5), 491-503.
- Krajcik, J., & Blumenfeld, P. (2005). Project-Based Learning. In R. Sawyer (Ed.), *The Cambridge Handbook of the Learning Sciences* (Cambridge Handbooks in Psychology, pp. 317-334). Cambridge: Cambridge University Press.
doi:10.1017/CBO9780511816833.020
- Shekar, A. (2014, June). Project-based learning in engineering design education: sharing best practices. In *2014 ASEE Annual Conference & Exposition* (pp. 24-1016).
- Solomon, G. (2003). Project-based learning: A primer. *Technology and learning-dayton-*, *23*(6), 20-20.
- Wurdinger, S. D. (2016). *The power of project-based learning: Helping students develop important life skills*. Rowman & Littlefield.
- Zafirov, C. (2013). New challenges for the project based learning in the digital age. *Trakia Journal of Sciences, 11*(3), 298-302.
- Zegwaard, K. E., Pretti, T. J., & Rowe, A. D. (2020). Responding to an international crisis: The adaptability of the practice of work-integrated learning.

Implementation of cooperative and work-integrated education at “Professional University” in Japan: Case studies of Faculty of Information, Kaishi Professional University

PANN YU MON

SHUTA UENO

GENGO SUZUKI

NAOYUKI KARASAWA

KEITARO HORIKAWA

MASAHIRO NISHIKAWA

MASAHIRO AWAJI

TETSUAKI ISONISHI

Kaishi Professional University, Niigata, Japan

BACKGROUND

Higher Education System Reforms in Japan

Recognizing the growing demands for professional. Is such as data scientist, AI expert, multimedia creator, medicare service professionals, etc., Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) has launched a study group “the Expert Panel on Establishment of Higher Educational Institutions Providing Professional Education” in 2013. (Kaneko, 2019) After four years, a new category of university “Professional University” was devised, and the School Education Act was revised in 2017. Under the new Act, Professional Universities should satisfy the following requirements

- More than 600 hours of on-site work experience is mandatory (20 credits equivalent)
- More than 40% of full-time faculties should have more than five years of working experience as professional of the domain
- Industry Liaison Committee should be created as an advisory body to continuously review and update education programs
- Class size should be 40 or less

The thinking behind is that it is essential to give more industry relevant, up-to-date knowledge and skills to students. Among those legal requirements, the most challenging and critical element is the introduction of long-term work-integrated learning.

Table 1 shows two different survey results about university student participation in internship. A survey of Recruit Career Co. Ltd. covers all forms of internship, and the questionnaire is answered by students (Recruit Career, 2021). MEXT survey covers only credited program for bachelor students and the questionnaire is answered by university (MEXT, 2020).

According to the former survey, 70.5% of university students have participated in internship program. Among them 75% (multiple answers) participated one-day program. Usually, it is offered by company and its main function is to give company briefing and to register student names to candidate list. The internship program of longer duration has various purposes (cooperative program with university, regional/overseas study, research internship, etc.) but has less participation.

The latter survey reveals the overall status of the credited internship program. It has educational purpose and is implemented by university with the support or in collaboration with industry. Participation ratio is only 3% (of total bachelor students). Among participants more than 70% are less than 2 weeks and 90% are less than one month. It is difficult to implement long term internship program to fit in the tight academic calendar in Japanese university. Because of this, mandatory program is rather exceptional, and students tend to go internship program during vacation.

TABLE 1: Participation ratio and length of internship

Survey Source	Participation Ratio	Length of internship (% of internship participants)					
		One day	<1 week	<2 weeks	<1 month	<3 month	≥3 month
Recruit	70.5%	75.0	56.8	11.0	5.2	2.0	1.4
MEXT	3.0%	2.7	35.0	35.0	16.8	5.1	4.5

RESEARCH OBJECTIVE AND DESIGN

After reviewing above mentioned data, readers may understand that how challenging is the legal requirement to have “more than 600 hours of working experience”. While it is mandatory, university has a freedom to design when and how to implement on-site work experience program in its curriculum. The aim of this paper is to present how these challenging legal requirements are implemented through a case study, how work-integrated program is designed, which part of industry participated, what kind of skills does student have chance to learn, etc.

The authors designed this paper as case study research. While case study approach has weakness in generalizability of the findings given in the paper, it has the power to give answers to ‘how’ and ‘why’ types of research questions (Lucas et.al, 2018). It can describe the details of WIL practices with a “variety of lenses”. The following section gives how Kaishi Professional University designed and implemented university-wide, long term WIL program in a short time from scratch. Multiple aspects of the WIL program, partner industry profiles, location, working mode and accommodation, task given to students are discussed.

KAISHI APPROACH TO CWIE

Kaishi Professional University (KPU) is one of Professional Universities and inaugurated in April 2020 with two faculties, Faculty of Information and Faculty of Business Innovation. The Faculty of Information designed its Cooperative Work-Integrated Education (CWIE) program in the following format:

- Academic calendar is designed to fit the legal requirement of 600 hours CWIE on the basis of Quarter System.
- Assign 150 hours in the third quarter of the second year (around 5 weeks, 5 credits). Assign 450 hours in the third and fourth quarter of the third year (around 15 weeks, 15 credits). Thus, alteration of classroom teaching and on-site workplace experience will foster student capability of applying knowledge and skills to real world problems. These two time slots are reserved solely for CWIE.
- All faculties have responsibility of implementing whole process of CWIE program (find appropriate industry partners, work with partners to design educational program, monitor the program, finally evaluate students). In order to give effective guidance and advice to their students, a faculty member is dedicated and assigned five students in average.
- Prior to engaging internship program, students have to participate in skill-up classes. These classes equipped students to get necessary knowledge including information security, programming languages and business manner.

Partner Organizations: Sector and Size

KPU has sent 74 second year students to 25 industry partners as interns in 2021/2022 academic year. The first contact with industry partners was made even before the inauguration of the university because availability of on-site work opportunity is an indispensable building block for professional university. After the intensive consultations with industry partners, finally 25 companies are listed one year before dispatching students as shown in Table 2. KPU has 17 full-time faculties. Majority of them have long professional career (far longer than legal minimum five years) mostly in ICT field. This gives advantage in negotiating with industry to develop CWIE program.

TABLE 2: Industrial sector and size of company.

Sector	ICT	Manufacturing	Others	Total
1,000 ≤	3 (telecom, SNS, EC mall)	1 (office equip.)	1 (financial service)	5
300 ≤	1 (SW development)		2 (facility, education)	3
100 ≤		1 (office equip.)	1 (publishing)	2
30 ≤	6 (SW development)	1 (brewery)		7
< 30	5 (SW, education)	1 (foundry)	2 (education, consultancy)	8
Total	15	4	6	25

Majority (15/25) of partner organizations belongs to ICT sector such as telecommunication service, SNS, EC mall, software development, etc. There are several manufacturing and service companies, including financial service, facility service, education, and consultancy. Company size measured by the number of employees also varies. Based on Japanese SME definition (companies with less than 300 employees are SMEs), partner companies include 17 SMEs and 8 large companies.

Location of Partners, Working Mode, Language, and Accommodation Support

While “on-site” work experience is the legal request, due to the spreading of the COVID-19, the training was carried out in three modes, complete on-site, complete on-line, and hybrid. Working language of 2 partners is English and the rest is Japanese.

Since KPU is located in Niigata city (capital city of Niigata prefecture), majority of host organizations (13/25) located in Niigata city, 3 are in other cities of Niigata Prefecture and the rest are in Tokyo Metropolitan area.

As shown in Table 3, organization in Niigata carried out the program fully on-site (12/38) or partially on-site (26/38). There are no case of fully on-line. In other cities of Niigata prefecture, some organizations are within commuting distance, and some are not. So that working mode is quite diversified. In Tokyo area one half of students worked fully on-site (5/28) or partially on-site (9/28) and the rest half worked completely on-line.

TABLE 3: Location, working mode and accommodation support

Location	TOTAL	Working mode			Accommodation support		
		On-site	Hybrid	On-line	Partner	KPU	No
Niigata City	38	12	26	0	0	0	38
Other cities of Niigata	8	2	2	4	2	0	6
Tokyo area	28	5	9	14	0	7	21
Total	74	19	37	18	2	7	65

Students who worked outside of Niigata city need accommodation support. Among them 14 students worked in Tokyo, and 4 students worked in other cities of Niigata prefecture. For those students, KPU asked industry partners to provide dormitory for students. When partners could not provide, KPU rented a room for students near their work venue at university’s expense. Thus, all fully on-site working mode students got accommodation support either by partners or KPU. Accommodation support is critically important to implement on-site CWIE program.

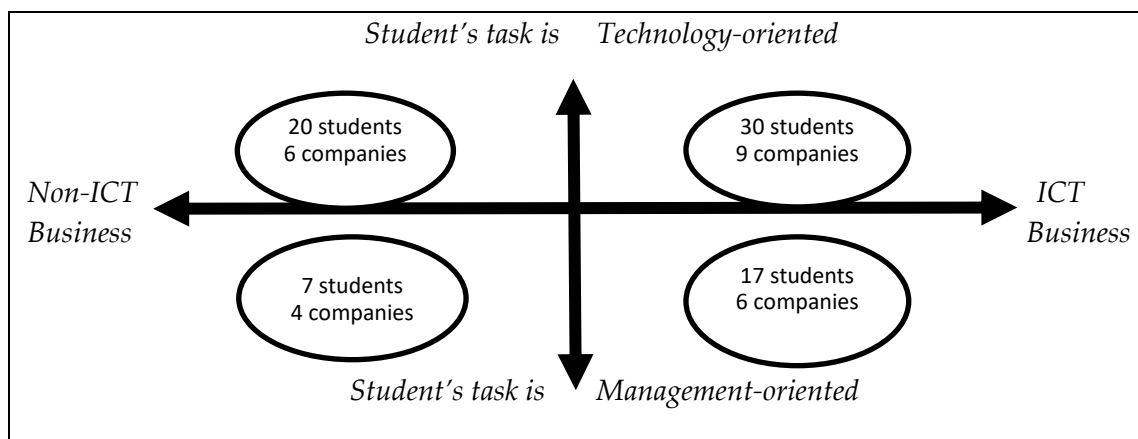
Students’ Tasks Given at CWIE Program

What had students learned through CWIE program? Tasks given to students consist of wide range of problem-solving missions, such as market data analysis, Kaizen study, web production, learning content production, RPA programming, etc. As it requires more detailed study to answer fully to this question, in this section authors present overall picture about the nature of tasks given to students.

The business natures of partner companies are classified into ICT and non-ICT. Nature of tasks given to students are classified into technology-oriented and management-oriented. It is difficult to classify the nature of tasks into two groups as tasks require combination of both management and technology skills. Authors, however, classified based on the major portion of tasks. In Figure 1, the horizontal axis represents the nature of business, and the vertical axis represents the nature of tasks given to students. It shows the number of students and the number of companies in each quadrant.

In the first quadrant, tasks are mainly technology-oriented ones, such as network engineering, requirement analysis of business application software, etc. In the second quadrant, tasks are also mainly technology-oriented, such as RPA programming, driving control AI, educational content production, meteorological data analysis, etc. In the third quadrant, tasks are mainly management-oriented ones such as market data analysis, multilingual promotion material development for ICT services, Kaizen proposal, Kaizen of public relations, etc. In the fourth quadrant, tasks are also management-oriented such as business data analysis, SDGs focused design thinking, public awareness promotion for local government, etc. Overall, two-thirds of students (50/74) challenged technology-oriented tasks and one-third of students (24/74) tackled management-oriented tasks.

FIGURE 1: Industrial sector of host organization and interns' allocation



Evaluation to Student by Faculties and Partners

The evaluation of student performance is carried out by both host company supervisor and university faculty during-program phase and post-program phase. Monitoring is done by daily on-line reporting of students to supervisor using web-based system called "CAM-TORE". It includes a short summary of work done and questions from student to supervisor (if any). Monitoring also includes site visit of faculties at least two times during the internship.

Moreover, students are asked to give the final presentation to relevant staff and supervisor of host organization at the end of the program. Students also have to give poster presentation at the symposium organized by university after all students return to campus. The poster format is shown in Table4. It includes Theme, background and purpose of work, summary of the work done, what I learned/realized. Average length of poster presentation is 1000 to 1600 character in Japanese.

KPU organized the first round of symposium in the last December, which was attended by all faculties, all students, and all partner organization representatives. The first-year students also attended this symposium to learn how CWIE program works and what they can learn from CWIE experience.

TABLE 4: Poster format presented in Symposium

Partner Organization	
Student Name	
Faculty	
<u>Theme:</u> <u>Background and Purpose of work:</u> <u>Summary of the work done:</u> <u>What I learned/realized:</u>	

Evaluation by Host organizations and Faculties

After CWIE program completed, program evaluation questionnaire was answered by host organization supervisors and faculty members. Questionnaire to host organization supervisor is made up of twenty questions which asks evaluation on the following points.

- Skill level of students
- Work attitude of students
- Length of internship
- Size of acceptance students
- Difference with similar program of other universities
- Communication of university faculties to host organization

All 25 partners answer the questionnaires. Overall, 84% (21/25) partners expressed willingness to accept students next year onward. Questionnaire to faculties ask only one questions “What is the most appealing points of the first attempt of CWIE program?”

- Student motivation for learning
- Social/ business attitude of student
- Technical skill of student
- Originality

Most respondents agreed that student growth of the main achievement points get from participating in internship program

CONCLUSION

A new type of university, Professional University was created in Japan. Its critical element is mandatory inclusion of CWIE program. Although COVID-19 brought a big trouble, all second-year students were sent to 25 companies in Niigata prefecture and Tokyo. They have successfully completed the program and got an opportunity to learn various technical and managerial knowledge and skills to solve real world problems. In order to make this program sustainable, more effort is needed to make this program more attractive to host organizations.

REFERENCES

- Kaneko, M., (2019, March~April). The Formulation of Professional Universities: Background and Challenges of a New Institutional Type in Japan. *Japan Labor Issues*, 3(13), 30-42. <https://www.jil.go.jp/english/jli/documents/2019/013-03.pdf>
- Lucas, P., Fleming, J., Bhosale, J. (2018). The utility of case study as a methodology for work-integrated learning research. *International Journal of Work-Integrated Learning*, Special Issue, 2018, 19(3), 215-222.
- MEXT (2020). *Survey on Internship in Universities in 2019*. (In Japanese)
https://www.mext.go.jp/content/20201204-mxt_senmon01-000010706_01.pdf
- Recruit Career (2021). *Survey on Job-seeking and Recruiting Behaviors*. (In Japanese)
https://shushokumirai.recruit.co.jp/wp-content/uploads/2021/03/hakusho2021_data.pdf

Effects and challenges of internships as communities of practice on young people's career development: A case study of a Japanese university

SACHIKO MORITA

Kochi University, Kochi, Japan

SEIGO NASU

Kochi University of Technology, Kami, Japan

INTRODUCTION

In relation to increasing the importance of career self-reliance, communities of practice (hereinafter called “CoPs”) have recently been gaining attention as a support for individuals career development. CoPs are defined as “A group of people who have interest or passion in something and who learn how to do it better by interacting regularly” (Wenger et al., 2002). For example, Arthur et al. (2005) pointed out that from the perspective of boundaryless careers, support for an individual's career from colleagues, mentors, and supervisors within the same organization is not sufficient. Therefore, they pay attention to CoPs as communities that support individuals' careers by bringing in outsiders beyond the restrictive boundaries of the organization. In Japan, a series of studies by Araki (2007, 2009) have proposed the suitable CoPs to enhance career self-reliance of adults.

For university students, the workplace community in which they participate through an internship can be regarded as CoPs. In fact, many previous studies have used CoPs as a theoretical framework to analyze and understand students' learning in internships and to obtain implications for practice (e.g., Woodside et al. (2009), Murray et al. (2014), Goldman and Sterling (2020)). The following studies have also analyzed the impact of internships on students' career development, based on the CoPs as a framework for analysis. Sutherland et al. (2005) viewed internships in pre-service teacher education as a community of practice and stated that this experience appeared to assist them to review their choice to become a teacher as well as appreciate the wide range of skills they will need in their future careers. Trede and Sturt (2012) noted that from theoretical concepts of identity, WIL programs where students are exposed to various communities of practice and join multiple group memberships, can be conceived as the space in the curriculum where professional identity is tested, threatened and reshaped.

OBJECTIVE

As described above, the use of CoPs as a framework for analysis could also contribute to design more effective internships for students' career development. However, despite "interaction" being regarded as the main characteristic of CoPs, there are a few previous studies that have clarified what certain kind of interactions between supervisors and students, or among students, are effective for students' career development.

Therefore, we aimed to clarify the following two things in this study:

1. Do internships as CoPs have the same effect on career development as other general CoPs?
2. If so, what kind of "interactions" result in that effect?

THEORETICAL BASIS

We adopted the model of Morita (2021) which describe the process that how the participation in a community of practice cultivates youth career development as the theoretical framework for this study (see Figure 1). Morita (2021) model is based on an existing model of social interaction in the field of social psychology structured around three skills: encoding, decoding and control skills.

According to Morita (2021), in CoPs, young people have frequent opportunities for self-disclosure in the process of pursuing interests and performing roles. As a result, they discover their unrecognized weaknesses based on feedback from others and situations. Triggered by the lack of acceptance of their weaknesses by others, young people withhold the expression of their feelings and adjust their behavior by referring to the words and behavior of proficient people and organizational philosophies. Through this interaction, the CoPs can have impact on the career development of young people in the following: (a) enhancing social skills, (b) acquisition of multitasking and responsibility skills essential as a member of the community, and (c) opportunities for exploring new perspectives for career and further learning.

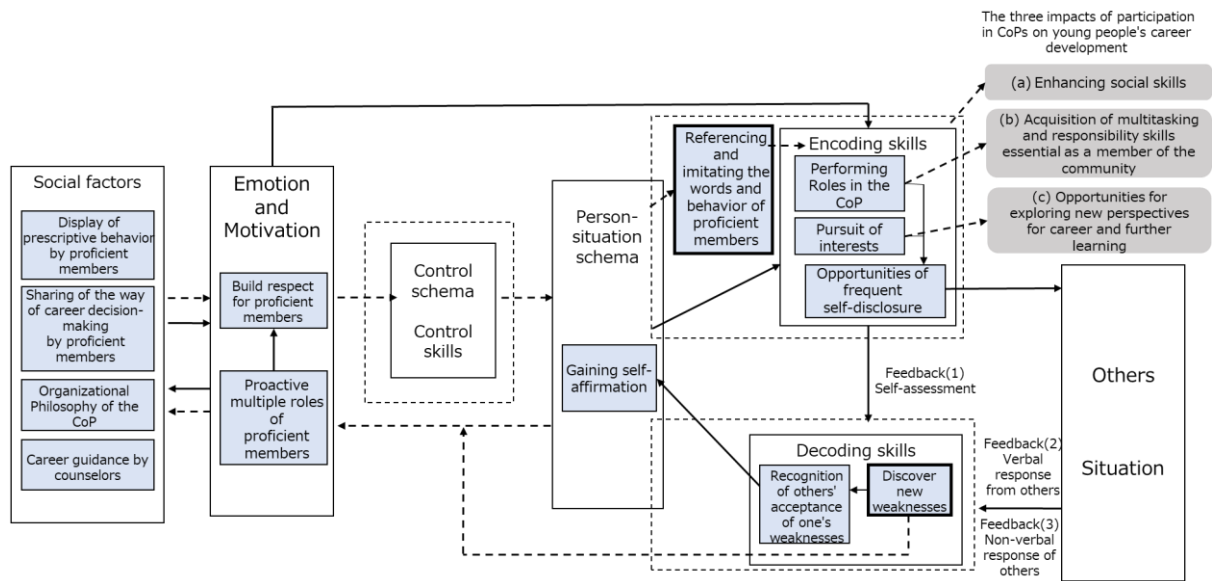
This model provides several useful perspectives on designing an internship program. First, we need to offer students "frequent opportunities for self-disclosure" during their internships. Otherwise, they will not be able to discover their unrecognized strengths and weaknesses. Second, they need to have access to supervisors and their organizational philosophies in order to get clues to address the challenges they are facing. And finally, if supervisors do not willingly disclose their own values related to their careers and problem solving, students will not be motivated to refer to or follow their behaviors.

METHODOLOGY

We conducted an online survey in January 2022. The participants were final-year students from various faculties and programs in Kochi University in Japan. After missing data and outliers were discarded from the sample, we have 149 participants and we only used data of 85 internship participants in this study.

To verify research question (1), we asked the participants how three career development effects ((a)~(c) in the Morita (2021) model) changed before and after the internship using the Likert method (6 steps). Then, we verified by T-test whether there was a significant difference between the pre- and post-internship scores.

FIGURE 1: The process by which participation in a CoP cultivates youth career development (Morita, 2021)



To analyze research question (2), we created 13 question items based on Morita (2021) which ask the participants whether they did behavior corresponding to interaction in the internship (using the Likert method (6 steps). In addition, for each of the three effects, we classified the data into “effective group” and “ineffective group” and verified whether the two groups had a significant difference in 13 items by T-test. The "effective group" refers to data in which the score of the Likert method (6 steps) for each of the three items related to the effect on career development was 1 or more between pre- and post-internship participation. The "ineffective group" refers to data in which the results of the same procedure were less than 0.

All the above were answered about the internship that the participants attended for the first time this year, as most Japanese university students usually participate in multiple internships a year. Regarding the number of days of internship, 55 students answered that it was one day. Nineteen students said it lasted two to four days, five students said it lasted one week, and six students said it lasted more than three weeks. Regarding style, 45 students answered that the internship was face-to-face. On the other hand, 34 students said it was online and 6 students said it was a hybrid.

RESULTS

(1) Do Internships as CoPs have the Same Effect on Career Development as Other General CoPs?

Table 1 shows the results of the T-test confirming whether the participation in the internship had the three effects of career development. The results suggest that participation in internships is effective in all three career developments.

TABLE: Three effects of internships as CoPs on youth career developments

Variable	pre-internship		post-internship		<i>t</i> (83)
	scores		scores		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
(a) enhancing social skills	4.024	0.945	4.388	0.827	-4.21 ***
(b) acquisition of multitasking and responsibility skills essential as a member of the community	4.224	0.886	4.459	0.834	-2.89 ***
(c) opportunities for exploring new perspectives for career and further learning	3.871	1.049	4.400	0.996	-5.04 ***

* $p < .05$, ** $p < .01$, *** $p < .001$

(2) If so, what "Interactions" Result in that Effect on Career Development of Youth?

Table 2 shows the results of whether there was a significant difference in 13 items between the "effective group" and the "non-effective group" for each of the three effects.

Regarding (a), though the score of the "effective group" was high in most of the items, no significant difference was found by the T-test. Regarding (b), a significant difference was found in 8 out of 13 items. In particular, the difference between "Discovering new weaknesses by the words and behavior of others" and "Feedback (1) Self-assessment" was remarkable. Regarding (c), there are significant differences observed in the three items of "Pursuit of interests", "Opportunities of frequent self-disclosure", and "Discovering new weaknesses by the words and behavior of others".

TABLE 2: The differences in 13 items between the "effective group" and the "non-effective group" for each of the three effects

	(a) enhancing social skills					(b) acquisition of multitasking and responsibility skills essential as a member of the community					(c) opportunities for exploring new perspectives for career and further learning				
	effective group (n=26)		non-effective group (n=59)		<i>p</i>	effective group (n=23)		non-effective group (n=62)		<i>p</i>	effective group (n=35)		non-effective group (n=50)		<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
1. Pursuit of interests	5.346	0.745	5.017	0.991	0.10	<u>5.435</u>	<u>0.662</u>	5.000	<u>0.992</u>	0.02	<u>5.343</u>	<u>0.684</u>	4.960	<u>1.049</u>	0.04
2. Performing Roles in the CoP	4.462	1.067	4.593	0.873	0.58	4.783	1.166	4.468	0.824	0.24	4.371	1.003	4.680	0.868	0.14
3. Opportunities of frequent self-disclosure	3.846	1.120	3.847	1.157	1.00	<u>4.391</u>	<u>1.118</u>	<u>3.645</u>	<u>1.088</u>	0.01	<u>4.143</u>	<u>0.974</u>	<u>3.640</u>	<u>1.208</u>	0.04
4. Feedback (1) Self-assessment	4.538	1.140	4.593	1.069	0.84	<u>5.043</u>	<u>0.767</u>	<u>4.403</u>	<u>1.137</u>	0.00	4.486	1.095	4.640	1.083	0.52
5. Feedback (2) Verbal response from others	4.577	1.137	4.339	1.092	0.37	<u>4.870</u>	<u>0.968</u>	<u>4.242</u>	<u>1.112</u>	0.01	4.371	1.031	4.440	1.163	0.78
6. Feedback (3) Non-verbal response from others	4.500	1.421	4.373	1.081	0.69	<u>4.870</u>	<u>1.058</u>	<u>4.242</u>	<u>1.197</u>	0.02	4.457	1.245	4.380	1.159	0.77
7. Discovering new weaknesses by self-assessment	4.654	1.018	4.525	1.040	0.60	4.913	1.083	4.435	0.985	0.07	4.714	0.987	4.460	1.054	0.26
8. Discovering new weaknesses by the words and behavior of others	4.654	1.093	4.339	1.183	0.24	<u>5.043</u>	<u>0.878</u>	<u>4.210</u>	<u>1.175</u>	0.00	<u>4.771</u>	<u>0.877</u>	<u>4.200</u>	<u>1.278</u>	<u>0.02</u>
9. Recognition of others' acceptance of one's weaknesses	4.269	1.185	4.102	1.170	0.55	4.348	1.301	4.081	1.121	0.39	4.229	1.239	4.100	1.129	0.63
10. gaining self-affirmation by recognizing the acceptance of others	4.038	1.183	4.085	1.134	0.87	4.391	1.234	3.952	1.093	0.14	4.229	1.087	3.960	1.177	0.28
11. Referencing the words and behavior of proficient members	4.885	1.071	4.644	1.242	0.37	5.000	1.087	4.613	1.219	0.17	4.857	1.167	4.620	1.210	0.37
12. Imitating the words and behavior of proficient members	4.500	1.304	4.271	1.229	0.45	<u>4.870</u>	<u>1.180</u>	<u>4.145</u>	<u>1.226</u>	<u>0.02</u>	4.514	1.173	4.220	1.298	0.28
13. Referencing or imitating the words and behavior of other students	4.231	1.336	4.153	1.324	0.80	<u>4.696</u>	<u>1.295</u>	<u>3.984</u>	<u>1.287</u>	<u>0.03</u>	4.457	1.172	3.980	1.392	0.09

DISCUSSION

Regarding the research question (1), a statistically significant difference was confirmed between the pre- and post-internship scores for all three effects of the Morita (2021) model. This has reaffirmed that even internships with extremely short periods or online internships, which have become popular in Japan in recent years, have a positive effect on the career development of young people.

Next, we analyze about the research question (2). Regarding (a), which is “enhancing social skills”, though the score of the “effective group” was high in most of the items, no significant difference was found by the T-test in the 13 items based on the Morita (2021) model when comparing the 2 groups. This suggests that the acquisition of social skills in the internship may be caused by a process different from that of the Morita (2021) model. This may suggest that, depending on the level of social skills of the students, there may be different interactions and processes to further enhance their social skills in the internship. In the first place, interactional behavior and social skills are closely related and students whose social skills are underdeveloped, it may be difficult for them to do interactional actions itself in the first internship. These students need assistance in developing higher social skills through internships. This point needs to be investigated in more detail in the future.

Regarding (b), which is “acquisition of multitasking and responsibility skills essential as a member of the community”, there was a significant difference in 8 out of 13 items of the Morita (2021) model when comparing the “effective group” and the “ineffective group”. Therefore, it became clear that internships improve young people's multitasking and responsibility skills in a process that is very close to other CoPs such as Morita (2021)'s model. In addition, analysis of the items with significant differences indicates that it is necessary to provide students opportunities for self-disclosure in the process of pursuing their interests and meaningful feedback on each occasion. It also reveals the importance of allowing students access to the words and behaviors of the proficient and other students in order to overcome their own challenges.

Regarding (c), that is “opportunities for exploring new perspectives for career and further learning”, significant differences was confirmed in 3 out of 13 items of the Morita (2021) model when comparing the “effective group” and the “ineffective group”. It was suggested that it is important for students to be able to demonstrate and evaluate their own abilities and characteristics as they engage in internships with interests. However, since only three items were found to have a significant difference between the two groups, it is possible that students are gaining a new perspective through a process different from the Morita (2021) model.

In addition, we found the challenges of internship as CoPs that the score of “Opportunities of frequent self-disclosure” is extremely low compared to the other 12 items which is Morita (2021) pointed out that it is an essential for career development for young people in communities. Fewer opportunities for self-disclosure means that students have fewer opportunities to receive meaningful feedback during their internships, which can be an impediment to their career development. It is assumed that one of the reasons for this is that many internships in Japan are extremely short, lasting only a day or a few days, and sometimes the programs do not include actual work experience.

We plan to conduct an interview survey with some participants of this study in the future to clarify the detail of process which causes of the effects of (a) and (c) in the case of internships. Furthermore, Through the interviews, we would also like to discover the reason why the "Opportunities of frequent self-disclosure" score was so low as well.

REFERENCES

- Araki, J. (2007). The Study of Communities of Practice Facilitate Career Development for Workers in Enterprises. *Japan Journal of Educational Technology*, 31(1), 15–27.
- Arthur, M. B., Khapova, S. N., & Wilderom, C. P. M. (2005). Career success in a boundaryless career world. *Journal of Organizational Behavior*, 26(2), 177–202. <https://doi.org/10.1002/job.290>
- Goldman, A. S., & Sterling, A. E. (2020). Becoming a Part While Apart: Building Professional Identity and Membership When Working and Learning Remotely. *International Journal of Work-Integrated Learning*, 21(4), 387–399.
- Morita, S. (2021). *A hypothetical model of the process by which participation in a community of practice encourages youth career development: Based on the case of Efterskole and Folk high school in Scandinavia*. Paper session presented at the meeting of Career Design Institute-Japan, Tokyo.
- Murray, M. A., Zakrajsek, R. A., & Gearity, B. T. (2014). Developing Effective Internships in Strength and Conditioning: A Community of Practice Approach. *Strength & Conditioning Journal*, 36(1), 35–40. <https://doi.org/10.1519/SSC.0b013e31828557d7>
- Sutherland, L. M., Scanlon, L. A., & Sperring, A. (2005). New directions in preparing professionals: Examining issues in engaging students in communities of practice through a school–university partnership. *Teaching and Teacher Education*, 21(1), 79–92. <https://doi.org/10.1016/j.tate.2004.11.007>
- Trede, F., & Sturt, C. (2012). Role of work-integrated learning in developing professionalism and professional identity. *Asia-Pacific Journal of Cooperative Education*, 13(3), 159–167.
- Wenger E., McDermott R. T., & Snyder W. M. (2002). *Cultivating communities of practice*. Boston, MA: Harvard Business School Press. <https://ci.nii.ac.jp/ncid/BA60416951>
- Woodside, M., Ziegler, M., & Paulus, T. M. (2009). Understanding School Counseling Internships from a Communities of Practice Framework. *Counselor Education and Supervision*, 49(1), 20–38. <https://doi.org/10.1002/j.1556-6978.2009.tb00084.x>

Have we met? Assessing links between academic and work learning

KAREN NULTON

JOHANNA INMAN

Drexel University, Philadelphia, US

T. JUDENE PRETTI

University of Waterloo, Waterloo, Canada

INTRODUCTION

Work-integrated learning (WIL) programs are an educational approach being adopted by an increasing number of higher education institutions. One of the defining features of WIL is the involvement of three key stakeholder groups: students, organizational partners (sometimes these are employers), and the educational institution (Fleming et al., 2018). While research has explored outcomes and competencies that students gain through WIL (Drewery et al., 2016; English et al., 2021; Jackson, 2015; Trede, 2012) and key activities for quality WIL experiences (Campbell et al., 2021; McRae et al., 2018), little has been written about the range of organization structures found in WIL (e.g. centralized/decentralized) or about how Centers for Teaching and Learning (CTLs) interact with WIL. As higher education institutions create or expand WIL programs, there is a need for careful consideration of how the key functions required for quality WIL are organized within an academic institution, specifically as it relates to teaching and learning (T&L). That is, how are faculty, students and organizational partners supported in their engagement with WIL and how does this align with the support they receive in the classroom? This is the research question at the heart of this work.

THE STUDY

Our study analyzes the relationship between WIL and T&L. Data were collected via a voluntary survey sent to the membership of WIL and CTL organizations. Respondents were asked to self-identify as being primarily affiliated with WIL or a CTL. WIL organizations were slightly oversampled (n=19, CTL= 12). CTL samples predominantly represented North American respondents; WIL samples had a simple majority of North American respondents with strong responses from the south pacific and the UK/EU. We labored over how to word the definitions of WIL and T&L that we asked respondents to use and found the spaces where our definitions broke down to be particularly instructive.

Three authors with different roles contributed to this study. The primary author is a faculty member who teaches at a large co-op school in the U.S. where she engages in research with the centralized WIL program. The second author is an experienced WIL administrator and researcher at a research institution in Canada with strong WIL support. The third author is a new Director of a CTL at a research institution and co-op school. Our different roles and experiences related to WIL, T&L, and CTLs provided an opportunity to analyze the data from multiple perspectives and come to some consensus.

THE VIEW AS A FACULTY MEMBER/RHETORICIAN

Language in any shared space serves to construct and support a specific power/organizational structure (Cheney & Lair, 2005). When we say “learning” in higher education—including sub definitions such as who helps to empower learning and where this happens—we refer, then, not only to an activity but to an organizational structure. Given this, it is not surprising that our attempt to impose a shared definition of WIL and T&L for our survey elicited rhetorical movements that subtly (and not so subtly) undermined our definitions.

Our mixed method study shows interesting differences between quantitative and qualitative responses—or, between responses where our language dominated and responses where the rhetorical situation of the respondent dominated. When we asked WIL and CTL practitioners to quantify how often they collaborated (4=very often, 3=often, 2=occasionally, 1= very seldom or never) the mean was reasonably close:

- WIL mean=2.56
- CTL mean=2.62

In this instance, regional and programmatic differences are small and both groups offer a robust affirmation of interdependence. Respondents seem to assume a shared definition of WIL and T&L since they were able to quantify collaboration—or, at least, their definitions elicited similar answers.

Directly after this question we asked a qualitative question that focused on organizational relationships. Respondents were asked to build on earlier definitions of WIL and T&L to explain how WIL and T&L were related at their institution. We found interesting differences between the responses of WIL and CTL practitioners.

A response that typified a large communication gap between these practitioners came from a CTL respondent who replied, “I have never heard of WIL and from your definition I don’t really understand what it is. I don’t think [X] university has anything that would fall into this description.” A simple google search reveals that 91% of [X] university’s students participate in their career center’s “experiential learning” that includes internships, micro-internships, and part-time jobs. Clearly, the language that we used—and that the respondent’s university used—simply did not register in this person’s taxonomy of teaching and learning. While this is an extreme example, it exemplifies the cross-talk that other responses echo.

Another respondent from CTL is more confident about their role in WIL, but that confidence reflects a clear schism: “Our [CTL] and internship center do not collaborate. Our [CTL] would support our faculty who are teaching/facilitating/monitoring internships should they need curriculum assistance.” The stark demarcation of who CTL supports—faculty teaching courses or creating curriculum—makes it clear that employers do not count as co-teachers to be supported and that the focus of CTLs remains firmly rooted in the traditional classroom.

The WIL responses, not surprisingly, showed more variance; we believe that we captured not only differences in whether the work of WIL is shared with CTL, but also regional differences in WIL implementation. WIL respondents often replaced our definition of T&L with the internal structure that

supports learning during WIL (unlinked to a sense of a university-wide CTL). Our research suggests that defining “learning” in specific contexts can reveal uneven learning support in organizational paradigms.

THE VIEW FROM A CENTER FOR TEACHING AND LEARNING

As an educational developer new to a university where 92% of eligible undergraduates participate in WIL as a significant portion of their academic program, I was expecting to learn about ways staff in CTLs and WIL offices worked collaboratively to provide professional development opportunities and resources to faculty—perhaps even to employers. However, to my surprise in many cases CTL respondents reported few collaborations. When collaborations were reported, their responses focused on program requirements or curriculum as opposed to pedagogical approaches or learning strategies.

As an example of this focus on curricular support one respondent writes, “The [CTL] works closely with program curriculum committees and the WIL administrator to ensure student experiences are focused on curricular learning outcomes.” Similarly, another respondent explains, “the [CTL] works closely with faculty and associate deans on curriculum development which must clearly identify competencies/learning outcomes for WIL.” While these responses indicate proactive collaborations around curriculum specifically, another respondent implies that this type of collaboration is not a regular occurrence. However, one CTL respondent writes, “we have worked with the arts & sciences faculty fellows over the years to collaborate on workshops for faculty about teaching internships and about creating effective reflective assignments” indicating pedagogically focused collaborations between their CTL and WIL.

The focus on curriculum development as opposed to pedagogical development may also be relevant when considering responses about whether and how students are asked to connect WIL experiences in academic classrooms. Most respondents reported that students are consistently aware of specific programmatic learning goals that they will need to meet during WIL. There were also more respondents that indicated the use of portfolios or other reflective practices in academic settings to create links to WIL learning experiences than those who indicated that this was not happening. However, few responses indicated students at their institution experience specific discussions of how learning within a current course will be applied to future WIL experiences. This could be a result of a lack of training for faculty on how or why they might want to do this. Additionally, this is consistent with reports of “never or seldomly” providing faculty or new faculty with workshops or onboarding which included how to make connections between or integrate WIL and academics in their classes. Regardless, this disconnect reveals a missed opportunity to support students to intentionally relate classroom experiences with WIL experiences, which is key to integrating WIL effectively (Smith & Worsfold, 2015).

Lastly, CTL respondents reported that a majority of the resources they provide regarding WIL are focused on faculty and students. This response was fairly consistent with only one outlier who responded that 60-80% of their resources are focused on employers. As studies have indicated that WIL employers see themselves in an educational role (Fleming et al., 2021), this data may indicate a gap in

providing employers professional development opportunities and resources that help them to improve on their integral role as teachers.

THE VIEW AS A WORK-INTEGRATED LEARNING ADMINISTRATOR

As a WIL administrator who has been involved with work-integrated learning programs for more than 15 years at a university with a centralized co-op program that approximately 70% of undergraduates participate in, I was very interested to examine the descriptions that participants provided on how the WIL and CTL offices are structured within their institutions. The survey asked participants to describe the structural relationships for WIL and T&L at their institutions and the ways that they interact. A thematic analysis of the responses revealed a few different ways that WIL and T&L tend to be structured within an organization and a few different ways that they interact with one another.

With respect to structure, there were two main models that were described. The first is that the institution has a centralized WIL office. Some respondents referred to their career or their internship office as the place where WIL activities are supported. Some respondents also referred to their institution as having centralized support for teaching and learning. Where respondents described WIL and CTL having centralized units in their institutions, they often also described the reporting relationships with some mentioning that both WIL and CTL were included in the same senior leadership portfolio, for example both within the Academic Affairs portfolio and others reporting that WIL and CTL were part of different leadership portfolios. Other respondents in describing how WIL and CTL are structured within their institution indicated that support is provided within the academic department or faculty.

Participants provided examples of the ways that WIL and CTL activities are integrated. These responses were very closely connected to the structure that exists at their institution. For example, in the cases of centralized WIL and CTL, participants often described the WIL office as having the responsibility for finding and/or managing employer relationships for the WIL experiences, while the CTL activities were described as supporting faculty members with developing reflective prompts or how to incorporate WIL experiences into the curriculum. In the case of WIL support being provided within the academic department, it is sometimes the case that all activities related to WIL are associated with one role.

The ways in which organizational structures relate to the activities of WIL and CTL is an important question that needs further exploration. With the relatively small number of participants we had in this study we were able to gain an understanding of the variations of WIL & CTL structures that exist across institutions but further studies could explore the relationships between the organizational structures and the outcomes of WIL for the various stakeholders.

CONCLUSION

As we work to make WIL accessible to more students, we suggest the need for a clearer strategy for how to define WIL as central to the learning paradigm of institutions. In addition, we suggest that intentional collaboration (cross-presentations) between WIL conferences and CTL conferences might help to create more strategic collaborations.

REFERENCES

- Campbell, M., Leoni, R., Thomson, K., Tunny, R., Smith, L., & McAllister, L. (2021). The construction and testing of a framework to assure the institutional quality of work-integrated learning. *International Journal of Work-Integrated Learning*, 22(4), 505.
- Cheney, G., & Lair, D. J. (2005). Theorizing about rhetoric and organizations: Classical, Interpretive, and Critical Aspects. In May, S., & Mumby, D. K. (Eds.). *Engaging organizational communication theory and research: Multiple perspectives*. (pp. 55-84) SAGE Publications. <https://dx.doi.org/10.4135/9781452204536.n4>
- Drewery, D., Nevison, C., & Pretti, T. J. (2016). The influence of cooperative education and reflection upon previous work experiences on university graduates' vocational self-concept. *Education + Training*, 58(2), 179-192.
- English, P., de Villiers Scheepers, M. J., Fleischman, D., Burgess, J., & Crimmins, G. (2021). Developing professional networks: the missing link to graduate employability. *Education+ Training*, 63(4), 647-661.
- Fleming, J., McLachlan, K., & Pretti, T. J. (2018). Successful Work-Integrated Learning Relationships: A Framework for Sustainability. *International Journal of Work-Integrated Learning*, 19(4), 321-335.
- Fleming, J., Rowe, A. D., & Jackson, D. (2021). Employers as educators: the role of work placement supervisors in facilitating the transfer of skills and knowledge. *Journal of Education and Work*, 34(5-6), 705-721.
- Jackson, D. (2015). Employability skill development in work-integrated learning: Barriers and best practice. *Studies in higher education*, 40(2), 350-367.
- McRae, N., Pretti, T. J., & Church, D. (2018). *Work-integrated learning quality framework*, AAA. Retrieved from <https://uwaterloo.ca/work-learn-institute/wxlprojects/quality-wil-framework>
- Smith, C., & Worsfold, K. (2015). Unpacking the learning-work nexus: 'priming' as lever for high-quality learning outcomes in work-integrated learning curricula. *Studies in Higher Education*, 40(1), 22-42.
- Trede, F. (2012). Role of work-integrated learning in developing professionalism and professional identity. *International Journal of Work-Integrated Learning*, 13(3), 159.

Employers' perspectives on co-op student work tasks that support their employability competencies

KEVIN OLIVER⁵

ROBERT RENAUD

University of Manitoba, Winnipeg, Canada

INTRODUCTION

The neoliberal ideology is often cited as a root cause for the increasing pressure on higher education institutions to prioritize the development of career-ready graduates (Donald et al., 2017; Holmes, 2013; Rothwell & Rothwell, 2017). This increasing demand for graduates to achieve globally competitive employment competencies provides a clear indication of what society values as educational outcomes (Holmes, 2013, 2017) and has spurred increased participation in co-op programs in Canada. Co-op education is the formal integration of a student's academic study with paid work experience with a participating employer that agrees to supervise and evaluate the student (Angerilli et al., 2000). In this study, over 90% of respondents indicated that the duration of the work terms they supervise are over 8 weeks. While co-op education is intended to develop these employment competencies, employers' perspectives on the importance of these competencies and students' job performance based on these competencies, suggest a 'skills-gap' in post-secondary graduates (Hernandez-March et al., 2009; Hodges & Burchell, 2003; Lisá et al., 2019; Zegwaard et al., 2018). However, there are examples in which it is suggested a 'skills-gap' is not occurring (Moore & Morton, 2017; Refling & Borwein, 2014). Furthermore, the 'skills-gap' has been defined in different ways, which makes it more challenging to determine how much it generally exists (Borwein, 2014; Hernandez-March et al., 2009; Viczko et al., 2019; K. Zegwaard et al., 2018). Therefore, research on graduate employability remains both timely and relevant for many stakeholders, particularly as the funding within the Canadian context for co-op programs continues to grow (Morneau, 2019, p. 50).

Many co-op programs have fostered positive outcomes for students such as positively influencing self-concept (Drewery et al., 2016; Drysdale & McBeath, 2012) and developing skills during work placements (Blicblau et al., 2016; Crebert et al., 2004). However, a co-op program may not find positive outcomes because of various challenges that may affect a student's experience, such as misalignment of student expectations and their actual experience (Rowe et al., 2012) and even negative student outcomes such as a worsened students' affect when not hired for a co-op work term (Cormier & Drewery, 2017).

Clarke (2018) builds on previous interpretations of employability and suggests that graduate employability is comprised of the current labour market and an individual's perceived employability, which is a product of human capital, social capital, individual behaviours, individual attributes, and

⁵ This paper is based on a masters thesis written by the first author and supervised by the second author.

their own perception of the labour market. This study focused on human capital, specifically in relation to competency development of students during co-op work terms.

While several studies examined students' and recent graduates' employability competencies through the human capital lens in which they asked employers' perspectives on their importance and the students' performance, most of these studies were conducted outside of the Canadian context (Coll et al., 2002; Fleming et al., 2009; Hernandez-March et al., 2009; Hodges & Burchell, 2003; Nevison et al., 2018). Therefore, exploring this main question within a Canadian setting will provide more contextually relevant results. Further, there exists a gap in knowledge about the work tasks employers are assigning that support the development of various employability competencies that are considered 'important' and consequently the amount of time students spend on their development within their co-op work terms.

While it seems logical to assume that exploring employers' perceptions of employability competencies' importance and students' performance will demonstrate co-op program effectiveness, it may not be enough. The alignment between importance-performance-engagement may not be as close as expected. Therefore, this study explored the following research questions regarding employers' perspectives of select employability competencies:

1. How important is each employability competency among recent graduates?
2. How well do co-op students perform in each competency?
3. How frequently do employers assign co-op students work tasks that foster the development of each competency?
4. How many hours do co-op students engage in work tasks that foster development in each competency?

METHODS

The eligibility criteria for study participants consisted of employers who had hired co-op students for a minimum of two work terms and at least one of the hires had occurred in the past 24 months, prior to the invitation to participate. Each employer had a formal partnership with the participating university and was defined as the individual who directly supervised one or more co-op students. This means that a single organization could have more than one survey respondent if they had multiple co-op supervisors. Out of an estimated 300 eligible employers, 90 responded to the survey with an average response rate of each question of about 75%.

An online survey was created by the researcher to explore 10 employability competencies (as listed in Table 1). In a mixed methods approach, each competency was assessed with 4 Likert-type questions directly associated with the research questions and 3 open-ended questions to provide further context. Because previous studies that addressed research questions 3 and 4 were not found, a mixed-methods survey was determined to be an effective approach at reaching as many employers as possible and descriptive analysis was then used as there was no data to compare with. This study received ethics approval through the Research Ethics Board at the University of Manitoba.

RESULTS

TABLE 1: Competency Ratings – Importance, Performance and Frequency

	Importance ¹	Performance ²	Tasks/week ³	Hours/week ⁴
Adaptability	70	70	68	69
	5.9	5.2	3.4	4.2
	0.8	0.6	1.7	2.0
Analytical thinking and problem solving	69	69	68	69
	6.2	5.1	4.0	5.1
	0.7	0.8	2.0	2.2
Creative/innovative thinking	67	67	66	67
	4.9	4.7	3.0	3.4
	1.0	0.8	1.7	1.9
Concern for order, quality and accuracy	66	66	65	66
	6.1	5.1	4.4	5.2
	1.0	0.9	2.1	2.3
Interpersonal collaboration	66	66	65	66
	5.5	5.0	3.6	4.2
	1.1	1.0	1.9	2.2
Leadership	64	64	63	64
	4.2	4.3	2.5	2.7
	1.1	0.9	1.6	1.7
Oral communication	64	64	63	64
	5.7	4.8	3.5	3.7
	0.9	1.0	1.8	2.0
Organizational awareness	64	64	63	64
	4.3	4.3	2.4	2.6
	0.9	0.9	1.7	2.0
Technical knowledge	64	62	63	64
	5.5	5.0	4.6	5.5
	1.2	1.1	2.4	2.4
Written communication	63	63	63	64
	5.6	4.7	3.8	3.7
	0.9	1.0	2.0	1.8

¹How important is each employability competency among recent graduates?

²How well do co-op students perform in each competency?

³How frequently do employers assign co-op students work tasks that foster the development of each competency?

⁴How many hours do co-op students engage in work tasks that foster development in each competency?

Note. Within each cell - top, middle, and bottom values represent sample size, mean and standard deviation respectively.

Question 1: How Important is Each Employability Competency Among Recent Graduates?

On a scale from 1 meaning ‘Not at all important’ to 7 meaning ‘Crucial’, each competency, except for “Leadership” and “Organizational awareness”, had a mean rating above 5 meaning “Important” and requiring “reasonable performance for most job roles.” When asked how co-op programs could be improved in the open-ended questions, several employers noted that institutions should place greater importance on preparing students for work terms through emphasizing development of competencies in activities such as workshops or “real-world” scenarios in the classroom.

Question 2: How Well do Co-op Students Perform in Each Competency?

On a scale ranging from 1 meaning 'Very poor' to 7 meaning 'Excellent', employers rated co-op students' performance in a similar manner to that of question 1, with a slight alteration of ordering in the top three competencies. The "Adaptability", "Analytical thinking and problem solving", and "Concern for order, quality and accuracy" competencies received the highest mean ratings while "Organizational awareness" and "Leadership" remained the lowest mean ratings. The competencies rated lower were still considered "marginal" in which students were considered to "perform[s] at the baseline level of expected performance for a recent graduate." The open-ended questions, however, highlighted employers' primary consideration when assigning students with work tasks as whether they can complete the task or not and made multiple suggestions on how to better prepare students for work terms. These comments were generally disjoint from the ratings of students' performance across all competencies.

Question 3: How Frequently do Employers Assign Co-op Students Work Tasks that Foster the Development of Each Competency?

On a scale ranging from 1 meaning '0 tasks' to 9 meaning '15 or more tasks', "Technical knowledge", "Concern for order, quality and accuracy", and "Analytical thinking and problem solving" competencies represented the greatest mean number of tasks. This suggests that, on average, employers are assigning 5-6 work tasks per week that support the development of each of these competencies. Conversely, "Leadership" and "Organizational awareness", on average, employers believe they are assigning 1-2 work tasks per week that support the development of these competencies.

Within the open-ended responses, employers suggested that the primary considerations when assigning work tasks were (1) whether the student will be successful, (2) students' interest, and (3) organizational need. Organizational need was often considered in relation to student ability and student interest.

Question 4: How Many Hours do Co-op Students Engage in Work Tasks that Foster Development in Each Competency?

On a scale ranging from 1 meaning '0 hours' to 9 meaning '36 or more hours', the "Technical knowledge", "Concern for order, quality and accuracy", and "Analytical thinking and problem solving" competencies were associated with, on average, 16-20 hours per week. "Leadership" and "Organizational awareness" remain in the lowest ratings.

DISCUSSION

Employers indicated a general alignment between how they rated the importance of each competency to the ratings of its number of work tasks assigned and hours assigned. Further, the results suggest that employers believe that by the end of a co-op work term, students are performing at a level expected of recent graduates. Despite the positive ratings of performance, the open-ended questions emphasized the need for greater competency development and employers often highlighted that they assign work tasks primarily based on whether they believe the student can complete the work task. This may suggest a misunderstanding of employers in the purpose of co-op education and their role in developing

students holistically. To elaborate on this idea, it appears that the competencies that were generally rated higher lend themselves better to “shorter-term” tasks whereas competencies such as “Leadership” and “organizational awareness” may require greater contextual knowledge and therefore be more relevant in “longer-term” tasks. This idea may be rooted in the neoliberal ideology in that employers are looking for immediate workplace contributions and maintain less responsibility in development of longer-term employability.

CONCLUSION

Co-op programs continue to grow within Canadian post-secondary education as employers, government, and students expect greater career preparation from a university education. This study found that a significant gap did not exist between the competencies employers seek from recent graduates and their perspective on students’ proficiency in those same competencies. Furthermore, this study provided initial insight on the perception employers have about the number of tasks they assign to students that support the development of competencies they perceive to be important for recent graduates and the number of hours they believe students spend on tasks that support the development of those same competencies. The emphasis on “shorter-term” competencies suggests a reinforcement of neoliberal ideology and it is recommended that greater dialogue occur between institutions and employers on the purpose of co-op programs and the role of employers in supporting students’ long-term employability.

REFERENCES

- Angerilli, N., Bekkering, B., Crichton, A., Giles, A., Joyner, J., Lumsden, B., MacIntosh, D., MacRae, D., McCargar, K., O’Leary, D., Porteous, K., Racher, P., Ross, K., Sampson, R., & Thomas, J. (2000). Co-operative education manual: A guide to planning and implementing co-operative education programs in post-secondary institutions. <https://cewilcanada.ca/CEWIL/Resources/Co-Op-Ed.-Resources--Public-/Co-operative-Education-Resources.aspx>
- Blicblau, A. S., Nelson, T. L., & Dini, K. (2016). The role of work placement in engineering students’ academic performance. *Asia-Pacific Journal of Cooperative Education*, 17(1), 31–43.
- Borwein, S. (2014). *Bridging the divide, part I: What Canadian job ads said*. www.heqco.ca
- Clarke, M. (2018). Rethinking graduate employability: The role of capital, individual attributes and context. *Studies in Higher Education*, 43(11), 1923–1937. <https://doi.org/10.1080/03075079.2017.1294152>
- Coll, R., Zegwaard, K., & Hodges, D. (2002). Science and technology stakeholders’ ranking of graduate competencies part 1: Employer perspective. *Asia-Pacific Journal of Cooperative Education*, 3(2), 19–28.
- Cormier, L., & Drewery, D. (2017). Examining the effect of co-op non-employment and rejection sensitivity on subjective well-being. *Asia-Pacific Journal of Cooperative Education*, 18(3), 213–224.
- Crebert, G., Bates, M., Bell, B., Patrick, C.-J., & Cragolini, V. (2004). Developing generic skills at university, during work placement and in employment: Graduates’ perceptions. *Higher Education Research & Development*, 23(2), 147–165. <http://ejournals.ebsco.com/direct.asp?ArticleID=FKBG2YWT9B10E2Y5XL68>
- Donald, W., Baruch, Y., & Ashleigh, M. (2017). Boundaryless and protean career orientation: A multitude of pathways to graduate employability. In M. Tomlinson & L. Holmes (Eds.), *Graduate employability in context* (pp. 129–150). Springer Nature. <https://doi.org/10.1057/978-1-137-57168-7>
- Drewery, D., Nevison, C., & Pretti, T. J. (2016). The influence of cooperative education and reflection upon previous work experiences on university graduates’ vocational self-concept. *Education + Training*, 58(2), 179–192. <https://doi.org/10.1108/ET-06-2015-0042>
- Drysdale, M. T. B., & McBeath, M. (2012). Self-concept and tacit knowledge: Differences between cooperative and non-cooperative education students. *Asia-Pacific Journal of Cooperative Education*, 13(3), 169–180.
- Fleming, E., Martin, A., Hughes, H., & Zinn, C. (2009). “Maximizing work-integrated learning experiences through identifying graduate competencies for employability: A case study of sport studies in higher education.” *Asia-Pacific Journal of Cooperative Education*, 10(3), 189–201.

- Hernandez-March, J., Martin Del Peso, M., & Leguey, S. (2009). Graduates' skills and higher education: The employers' perspective. *Tertiary Education and Management*, 15(1), 1–16. <https://doi.org/10.1080/13583880802699978>
- Hodges, D., & Burchell, N. (2003). Business graduate competencies: Employers' views on importance and performance. *Asia-Pacific Journal of Cooperative Education*, 4(2), 16–22.
- Holmes, L. (2013). Competing perspectives on graduate employability: Possession, position or process? *Studies in Higher Education*, 38(4), 538–554. <https://doi.org/10.1080/03075079.2011.587140>
- Holmes, L. (2017). Graduate employability: Future directions and debates. In M. Tomlinson & L. Holmes (Eds.), *Graduate Employability in Context* (pp. 359–370).
- Lisá, E., Hannelová, K., & Newman, D. (2019). Comparison between employers' and students' expectations in respect of employability skills of university graduates. *International Journal of Work-Integrated Learning*, 20(1), 71–82.
- Moore, T., & Morton, J. (2017). The myth of job readiness? Written communication, employability, and the 'skills gap' in higher education. *Studies in Higher Education*, 42(3), 591–609. <https://doi.org/10.1080/03075079.2015.1067602>
- Morneau, W. F. (2019). *Investing in the middle class: Budget 2019*. <https://doi.org/10.5040/9780755610853>
- Nevison, C., Cormier, L., Pretti, J., & Drewery, D. (2018). The influence of values on supervisors' satisfaction with co-op student employees. *International Journal of Work-Integrated Learning*, 19(1), 1–11.
- Refling, E., & Borwein, S. (2014). Bridging the divide, part II: What Canadian job ads produced. In *Higher Education Quality Council of Ontario*. www.heqco.ca
- Rothwell, A., & Rothwell, F. (2017). Graduate employability: A critical oversight. In M. Tomlinson & L. Holmes (Eds.), *Graduate employability in context* (pp. 41–64).
- Rowe, A., MacKaway, J., & Winchester-Seeto, T. (2012). "But I thought you were doing that" - Clarifying the role of the host supervisor in experience-based learning. *Asia-Pacific Journal of Cooperative Education*, 13(2), 115–134.
- Viczko, M., Lorusso, J. R., & McKechnie, S. (2019). The problem of the skills gap agenda in Canadian post-secondary education. *Canadian Journal of Educational Administration and Policy*, 191, 118–130.
- Zegwaard, K. E., Khoo, E., & Adam, A. (2018). graduate competencies and competence: Science and engineering employers' perspectives. *3rd International Research Symposium on Cooperative and Work-Integrated Education*, 273–278. https://www.academia.edu/38090417/Graduate_competencies_and_competence_Science_and_engineering_employers_perspectives
- Zegwaard, K., Khoo, E., Adam, A., & Peter, M. (2018). The shifting perceptions by science and engineering employers of desirable graduate competencies: Comparing now to 15 years ago. In K. Zegwaard & K. Hoskyn (Eds.), *Fruit of the vine: Change, Challenge and opportunity for learning* (pp. 53–58).

A case study on the curriculum development for cooperative education in general education

NAOKO OSADA

Ritsumeikan University, Ibaraki, Japan

YOKO NAKAGAWA

Ritsumeikan University, Kusatsu, Japan

RESEARCH BACKGROUND AND PURPOSE

This research contributes to the study of industry-academia collaborative education for an uncertain new era, focusing on the case of curriculum development and improvement of the cooperative education program at Ritsumeikan University, Japan. Ritsumeikan University has about 35,000 students, 16 faculties, and 21 graduate schools covering diverse specialized fields on 4 campuses. Among Japanese universities of this size, Ritsumeikan University has pioneered internship programs and cooperative education in its curriculum (Kato, 2005). It is common to set up a workplace environment that corresponds to the major being undertaken in undergraduate school. Ritsumeikan University's cooperative education has focused on students forming cross-departmental teams to work on addressing core problems in the field. This interdisciplinary project-based learning (PBL) environment is attracting attention for presenting new opportunities in the field of work-integrated learning (Ferns et al., 2022). Therefore, in this study, we use the case of cooperative education in general education to address curriculum improvement and clarify the possibility of interdisciplinary PBL.

OVERVIEW OF THE PRACTICE

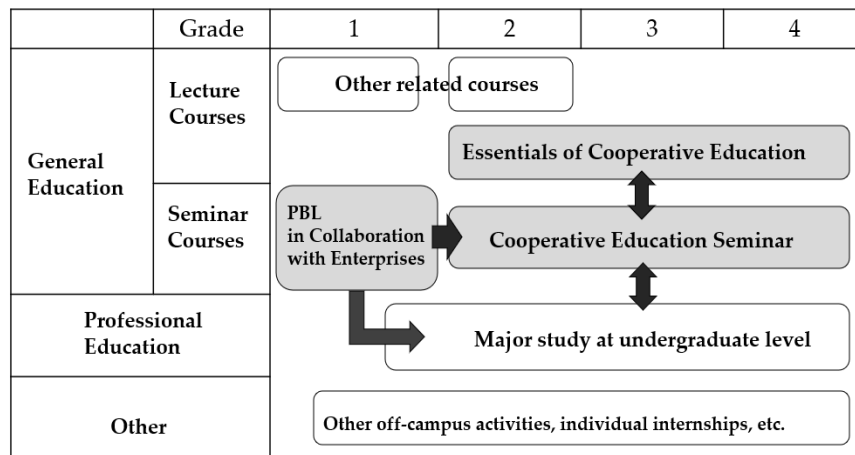
The following is an overview of the cooperative education program at Ritsumeikan University. As described in the second edition of the World Association for Cooperative Education (WACE) Handbook (Coll & Zegwaard, 2011), in recent years, Cooperative & Work-Integrated Education (CWIE) has been presented as a concept that integrates the terms cooperative education and work-integrated learning. The term's definition and interpretation may vary among countries and among universities. Therefore, the way in which the Institute for General Education of Ritsumeikan University implements CWIE will be discussed. This organization is an academic institution that has three canters (Liberal Arts Education, Career Education, and Service Learning) and integrates many elements of general education.

The Career Education Center of the Institute for General Education presents three basic principles of industry-academia collaborative education. First, the educational and academic program promotes students' development and learning. Second, the program develops students' awareness of social demands and the significance of learning through practical experience in society. Third, the program develops practical abilities to address various social and vocational problems and enhances comprehensive human potential that has autonomous and progressive mind. Based on these basic

principles, detailed programs are developed in synch with social requirements for human resources of a new era.

Of the courses in the curriculum related to internship and cooperative education, two are seminar style and one is lecture based (see Figure 1). With regard to general education courses that can be taken in the second year or higher, there is a PBL course “Cooperative Education Seminar” and a theoretical course “Essentials of Cooperative Education” that deals with the essence of the seminar. The former is a practical course in which students carry out projects for about six months based on the themes provided by partner companies. The latter is a lecture course to learn the basic idea enabling the autonomous activities of students in the projects. Students in the second grade and above can apply for both courses, and participation in the course will be decided after selection.

FIGURE 1: Related courses.



Additionally, after a trial implementation in 2016, “PBL in Collaboration with Enterprises” has been offered as a seminar-type course that can be opted for only in the first year since 2020. Students who have just entered the university can, thus, gain exposure to wider society so that they can understand the connection between university learning and society and effectively proceed with university learning. Students conduct PBL on campus and make proposals for themes shared by partner companies. It is positioned as an important course for students’ early exposure to society.

In 2021, the scale of the seminars was about 400 students who had opted for “PBL in Collaboration with Enterprises” and 19 companies collaborated; about 60 students who had opted for “Cooperative Education Seminar” and 6 companies collaborated. Partner companies understand the philosophy of the program and continuously provide an educational environment that fosters student learning.

The Ritsumeikan University Program described above, starting with Japanese-style cooperative education, aims to enhance the autonomous activities of students and enable deeper learning. It is a product of continuous curriculum improvement. Authentic themes from company workplaces were carefully selected for the program to be interdisciplinary. The courses currently being implemented can be described as work-integrated learning that is carefully designed so that projects can be organized for

that theme and extensive problem-finding and problem-solving activities can be carried out. By considering the case of Japanese-style cooperative education developed around interdisciplinary project-based work-integrated learning, the future directions mentioned in the research on work-integrated learning (Rowe et al., 2022) could be addressed in the context of Japan.

CASE STUDY ON CURRICULUM IMPROVEMENT

Focusing on two courses taken by second-year students and above, curriculum improvements and results that have been achieved in recent years will be discussed. Table 1 presents the progression over a year. It involves the collaboration of the participating students, collaborating companies, university staff, and faculty members in charge of the program. Even during the pandemic, some activities were conducted online, thus keeping up this process. The content of the final proposal of the “Cooperative Education Seminar” is evaluated highly by partner companies. The factors that made this possible are given below.

Themes Set by Partner Companies

The themes dealt with in the “Cooperative Education Seminar” will be examined mainly by partner companies and presented to the university by March annually. University staff and faculty members will carefully explain the basic principles of the program to the newly collaborated companies. Discussions may be held if there are concerns about the theme. When this program started, it included various themes such as strategic planning, new product development, video production, overseas expansion, trend forecasting, and comparative examinations of multiple technologies. The faculty members of each campus made adjustments such as forming project teams to suit the students’ specialties. Originally, in the field of problem solving, the problems that are actually dealt with in the field of a company are interdisciplinary. From the perspective of general education, the importance of setting themes has been reaffirmed, and the selection of interdisciplinary themes is currently underway. As a result, from one interdisciplinary theme, it is realized that each of the humanities team and the science team could make wonderful proposals according to their specialty.

Reorganization and Cooperation of Support Course

Results should be achieved through students’ autonomous activities rather than through the intervention of faculty members. “Essentials of Cooperative Education” was a subject that was set up from this perspective, but it was an intensive lecture at the beginning of the program and did not function as a support course. Therefore, as shown in Figure 1, it became a parallel course format through which students could learn important ideas in line with the “Cooperative Education Seminar” program. Along with the reorganization of the support course, the importance of the problem-finding/problem-solving process was reconfirmed. The support course contains rich group work to foster the experience of the thinking process that leads to proposals through problem-solving and an understanding of how to interpret interdisciplinary themes from companies.

TABLE 1: Annual schedule for cooperative education.

Month	Program for Cooperative Education Seminar	Essentials of Cooperative Education
	Implementation of next year's program	
Mar.	With the cooperation of companies, program and activity themes for the next year are considered.	
	Guidance/selection	
Apr.	After guidance, recruitment is conducted on campus, and	Adjust the lesson content according to the theme.
May.	participants in the courses are decided after selection.	
	Project commencement	
Jun.	Teachers, staff, and the entire teams get together to understand the flow and begin activities.	Lectures on basic ideas for understanding corporate activities and starting projects.
	Compliance and business etiquette training	
Jun.	Acquire knowledge of law and etiquette from experts to carry out activities.	
	Meeting with partner companies	
Jun.	The student team and the company meet and discuss issues related to the theme.	Lectures on how to get the activity on track and conduct research and analysis.
Jul.		
	Planning/presentation training	
Aug.	Acquire ideas necessary for activities according to the problem-solving process.	Lectures on the basic idea for addressing fundamental problems and examining solutions from the themes presented by companies.
	Corporate training	
Aug.	Each team goes to a partner company and receives training on the theme.	
Sep.		
	On-campus study group	
Fall semester	Teachers and student teams meet weekly to prepare proposals. There will also be discussions in class.	Grasp the examination status of each team and reflect it in the lesson method of the class.
	Primary proposal	
Oct.	Make the initial proposal to partner companies. Ask and answer questions and receive feedback.	Lectures on how to put together the final proposal by looking back on the primary proposal to the company.
Nov.		
	Final proposal	
Dec.	Based on the evaluations obtained from the primary proposal, make the final proposal to the partner companies.	
	Summary class	
Jan.	The faculty and the entire team will work together to interpret the evaluation and look back on the overall activities.	
	Report compilation	
Jan.	To finish the project, summarize the activities in a report.	Evaluate the usefulness of this course based on students' questionnaire responses and submissions.
Feb.	Companies, teachers, and staff also check the content.	

Promotion of Projects by Students

Students form teams to carry out PBL activities. As shown in Table 1, there are about six months from the meeting in June to the final proposal in December. In addition to the prescribed schedule of training, primary proposals, final proposals, etc., other activities are left to the students' initiative. It is entirely up to them to carry out such an investigation and what to put forward as the final proposal. At the request of students, the support course added a unit on project management and team building. Each team compiles a report at the end. This will be a step for students' experiential learning and involve a succession of activities till the next year and beyond.

Continuity with First-Year Classes

“PBL in Collaboration with Enterprises,” offered to first-year students, is a classroom-based seminar course. As with cooperative education, a team of students makes proposals on themes from companies. There are 15 lessons in one semester, and one class tackles the themes of two companies over the first and second halves of the semester. At the same time as this course was conceived, the cooperative education program confirmed that there were no differences in the definitions of basic concepts and, therefore, adjusted some terms. The number of students who participate in cooperative education the year after participating in this subject is gradually increasing, and based on their experience up to that point, they have proved that they can play an active role in a program with a sense of practical realities.

Study Group with Related Faculty and Staff

The company’s position changes year by year. For example, support for Sustainable Development Goals is currently underway. Additionally, it has an environment where students can participate freely in various programs in collaboration with companies. To show the policy of this program, we hold a study group once a year to discuss issues and confirm future directions.

SUMMARY

The cooperative education program in Ritsumeikan University's general education continues to improve with the aim of enabling students to learn autonomously and deeply by participating in corporate problem-finding and problem-solving processes. Students who have experienced interdisciplinary project-based work-integrated learning, which values the problem-finding and problem-solving process, are applying this experience in many situations such as specialized education and off-campus activities. While it is important to have a special work-integrated learning environment tailored to the student's specialty, the interdisciplinary work-integrated learning approach presented here is flexible in times of uncertainty and can contribute to the sustainable development of the program and students. Aside from the discussion of program naming for CWIE, the curriculum improvement of this study, which focuses on discussions to deepen the generic experience with high transfer potential from an interdisciplinary perspective, will be an important discussion in the field related to CWIE.

ACKNOWLEDGEMENT

This work was supported by JSPS KAKENHI Grant Number JP20K02954 & JP20K02980.

REFERENCES

- Coll, R., & Zegwaard, K. (2011). *International Handbook for Cooperative and Work-Integrated Education*. World Association for Cooperative Education, Inc.
- Ferns, S., Leoni, S., Russell, L., Childers, J., Brewer, M., & Alessandrini, J. (2022). Designing and implementing interdisciplinary project-based work-integrated learning. In S. Ferns, A. Rowe, & K. Zegwaard (Eds.), *Advances in Research, Theory and Practice in Work-Integrated Learning*. (pp.167-168). Routledge.
- Kato, T. (2005). Establishing cooperative education as an integral part of the undergraduate curriculum at Ritsumeikan University. *Asia-Pacific Journal of Cooperative Education*, 6(1), 7-12.
- Rowe, A., Ferns, S., & Zegwaard, K. (2022). A future of work-integrated learning. In S. Ferns, A. Rowe, & K. Zegwaard (Eds.), *Advances in Research, Theory and Practice in Work-Integrated Learning*. (pp.251-268). Routledge.

Developing a framework to assess the socio-economic impacts of work-integrated learning experiences across post-secondary programs in British Columbia, Canada

CAMILO PENA

STEPHANIE MCKEOWN

University of British Columbia, Kelowna, Canada

JULIE WALCHLI

University of British Columbia, Vancouver, Canada

INTRODUCTION

While much of the research on work-integrated learning (WIL) has focused on students, given their importance as main stakeholders in the WIL experience (Hay, 2020), there is a growing interest in the impact of WIL on other key stakeholders (McRae et al., 2018), including the benefits for employers (e.g., Braunstein et al., 2011; Drewery et al., 2020; Fleming et al., 2016), for educational institutions (e.g., Crump & Johnsson, 2011; Drysdale et al., 2016), and for regions (e.g., Government of Ontario, 2018; Larose Research & Strategy, 2020; Pretti et al., 2020). For the purpose of this paper, WIL refers to “curricular experiential education that formally integrates a student’s academic studies with quality experiences within a workplace or practice setting” (CEWIL Canada, 2021) and covers nine types of experiences (ibid.), such as co-operative education, apprenticeships, and professional practicums.

This paper describes the development and pilot testing of an assessment framework meant to measure the impacts of WIL experiences in host organizations and the broader local economy – meaning the impacts that go beyond the effects on students’ lives such as impacts in local organizations and macro-economic impacts. This conference paper, while providing an overview of the development of the framework and of the framework itself, will focus on how the tool was pilot tested and how the testing informed further work on the framework.

This research project and framework follow two main drivers. First, the need to complement past WIL research on students’ impacts and to contribute to the growing interest in the impact of WIL on other stakeholders, as mentioned above. And second, following a local call where the British Columbia (BC) WIL Council, composed of the leader of WIL at each of BC’s 25 public post-secondary institutions (PSI), identified a need for such a tool to be used for discussion with government, PSI leaders, and other stakeholders. Additionally, the Council was interested in telling the story of the impacts of WIL beyond what was currently in place in the province which relied mostly in number of students participating in WIL experiences.

This framework aims to consolidate and materialize previous research on WIL’s impacts and first hand research done in BC. Thus, the proposed framework is the result of primary and secondary data collection: the former consisting of interviews and focus groups with WIL experts and host

organizations and the latter consisting of a literature review of academic/practitioner documents as well as local regional WIL projects. As a result of this, five main impact domains were identified: (1) talent development, (2) productivity, (3) innovation capacities, (4) diversity & equity, and (5) community development & economic impacts. Each of these domains contain a series of subdomains and indicators. Subdomains refer to more specific areas of impact that at the same time can be measured with a series of individual indicators. While domains cover a broader set of impacts that can vary by industry or region, subdomains represent a way to subcategorize said domains into areas that can provide more specific information and that can be measured with concrete indicators. The resulting framework and indicators were shared with the project's steering committee and various iterations followed; this included the authors going back and forth between the literature, first-hand findings, and the analysis. The framework and its indicators were then tested via a survey tool to assess measurability, relevance, and comprehensibility piloted with seven BC WIL Council members.

METHOD

A framework details constructs that will be used to measure/assess specific impacts; it also identifies how these constructs connect to the content and design of the tool(s) used to measure impacts (Pearce et al., 2015). In order to further detail such constructs and connections with the measurement tool, one would have to decide an assessment approach and paradigm to follow. For this project, following Stirling et al. (2016), three main development paradigms and potential approaches were considered with a pragmatist approach chosen for the project. This approach emphasizes studying what is of interest to the evaluator and not detaching oneself from the data. It relies mostly on mixed methods approaches – arguing that methods should always match the purpose of each project. A pragmatist approach was selected as it provided the flexibility needed to deal with multiple types of WIL experiences and a diverse set of PSIs (25 in British Columbia). This approach also reflected the diverse ways in which WIL impacts could be measured through both quantitative and qualitative methods. Other framework elements were considered and defined (purpose, principles, process, assessment tools) and will be detailed in a longer version of this paper.

First Draft of Framework

After an extensive literature review, and using primary (semi-structured interviews and focus groups) and secondary data (related project reports, public statistics) collection methods, an iterative analytic process was implemented. This analytic process consisted in the interplay between various elements of research, including design, data collection, analysis, assessment through the project's steering committee, and additional data collection. With an iterative analysis process (fairly common in qualitative data analysis) a systematic, repetitive, and recursive process was used that allows for a level of flexibility and ongoing change needed in projects of exploratory nature that need adaptable data collection and analysis methods in response to the needs of the study (Mills et al., 2010). Through this iterative process, a set of five domains, 13 subdomains, and 43 indicators emerged.

Pilot Testing the Framework

Once the first version of the framework was finalized, it was tested to: (1) assess that the selected indicators were measurable through a survey questionnaire; (2) measure how relevant the constructs were for the sample group; (3) inquire about missing indicators or areas that were missing in the current iteration of the framework; and (4) understand if the selected constructs were comprehensible enough for employers and PSIs.

A group of seven PSIs volunteered to participate in the pilot testing; this included a diverse set of PSIs: smaller to larger institutions; colleges, institutes, and universities; WIL offices that were not part in the development of the framework (to get a fresh and unbiased perspective); and institutions from various geographic locations within BC.

The objective of the pilot test was to understand the measurability, relevance, and comprehensibility of the framework. Measurability was tested through the analysis of how many questions associated with indicators were being answered with not applicable and/or do not know responses. Similarly, comprehensibility was measured through these options while also considering qualitative feedback that included questions or comments about unclear concepts. Finally, relevance was measured through additional questions that asked about the relevance of the included indicators, complementing the questions about actual impacts.

Two survey tools were selected to pilot test the constructs and indicators: one targeted towards WIL host organizations/employers and one towards PSIs. Each volunteer institution participated in the PSI survey and distributed the employer survey to their WIL host organizations. 25 host organizations completed the survey (an approximate 15% response rate) and all seven PSIs participated in the PSI survey. More details on this process will be included in a longer version of this paper.

RESULTS OF PILOT TEST

The pilot testing of the framework provided some tool related findings as well as data/content related preliminary findings and potential avenues for further research. The main tool related findings include:

- Most “don’t know” and “not applicable” responses were found in specific domains, coming from particular industry partners (e.g., “Productivity” for Arts and Entertainment / Accommodation, food services host organizations).
- Few relative low impact indicators (e.g., indirect cost reductions)
- No additional/missing indicators were flagged or suggested by participants
- No feedback/comments regarding the clarity of concepts used

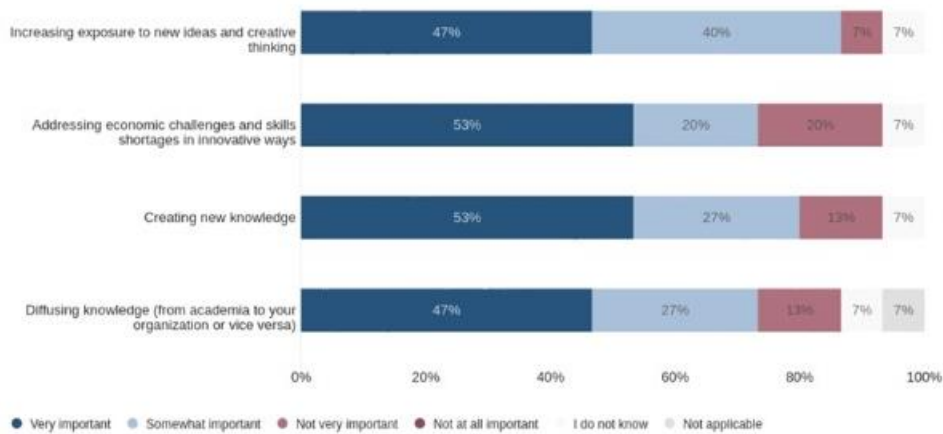
Given the small sample size of the pilot, only preliminary, early content/data findings can be reported on. Nonetheless, some trends and potential avenues for further research include:

- Overall, most host organizations reported a higher relevance vs impact for all domains (e.g., see Figure 1). Further research into this gap might be interesting.

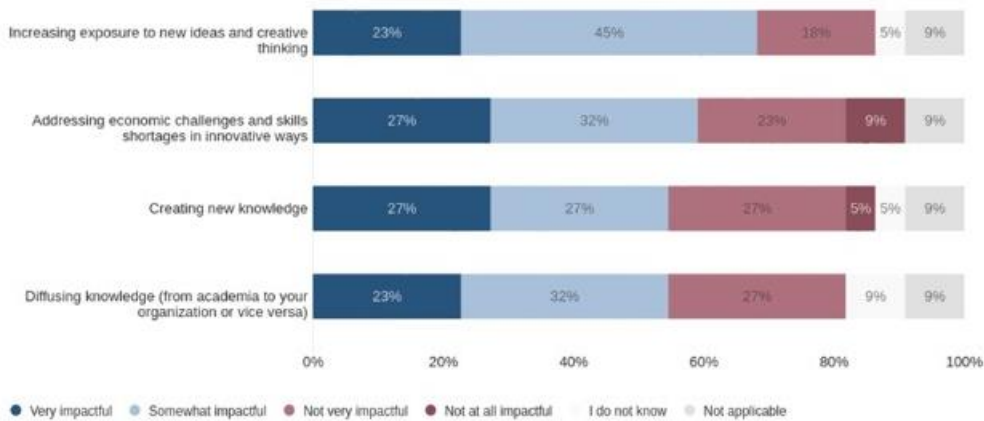
- Most partners report hiring WIL students after graduation (and in subject-related roles) – more data will be needed to further confirm this finding and explore if it is clearer in specific industries/WIL types/PSI types.
- There are some noticeable differences between PSI and employer perceptions of WIL’s impact in domains like innovation and the broader community/economic realm; further research may be warranted here.

FIGURE 1: WIL impacts and relevance on innovation capacity – employers’ perspective

Innovation Capacity - How **important** are the following benefits of working with a post-secondary student (via a WIL placement) for your organization?



Innovation Capacity - In general, thinking about your experiences with students from work-integrated learning programs, please rate how **impactful** these experiences were in:



Overall, most respondents were able to provide an assessment for all indicators. To manage some of the “not applicable”, “do not know”, and low-impact answers, the framework will be further segmented into modules that can be used separately, to measure and target specific industries/stakeholders. As will be described in the next section, this is the next step for implementation and sharing of the framework in BC.

The pilot testing provided another way to member-check what had already been shared with the project’s steering committee. Thus, member-checking was done with two different groups: one internal and more familiar with the framework and the research objectives; and a second one less familiar with the project and framework, but still familiar and knowledgeable about the topic of WIL.

The findings from the pilot test (summarized above) provided an endorsement beyond the one given by the internal steering committee group. These findings also provided feedback for further refinement as well as suggesting future research avenues. One main refinement is the need for a modular tool approach that follows the domains and subdomains established (see Table 1) and provides users the flexibility to use specific parts of the framework to assess the impacts of WIL programs in specific industries or areas of knowledge. Table 1 also summarizes the literature and first-hand research that informed each of the domains and subdomains selected for this framework.

CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

This paper presents the early stages of a framework to assess the impacts of work-integrated learning in the broader local economy and in host organizations that will continue to be developed in the coming year. This is a broad and extensive objective and the framework suggests a subcategorization of impacts by domains and subdomains, with further refinements that will include the segmenting of parts of the framework so that it can be used by modules depending on user needs and target audience. Finally, the development of the framework was based on current research and created through engagement with a diverse group of relevant stakeholders including PSIs, WIL experts, and host organizations.

Additionally, with research in WIL extending and growing beyond the impacts for students, this paper presents a useful categorized literature review of the various impacts that WIL can have in different aspects of society and the economy (see Table 1). The categories/domains presented here will be the base for the aforementioned modularization of the framework tool. As such, the tool will be available for use by parts, acknowledging the diversity of WIL programs, industries, and subject areas existing in British Columbia. The resulting modules will be incorporated into a local BC WIL resource hub that will serve as a toolkit (including case studies, instructions on how to use the framework, etc.) for anyone interested in using the framework to measure the impacts of their WIL programs in the defined impact domains.

Finally, as mentioned before, the pilot test also provided a series of interesting questions and potential avenues for future research including the comparison between perceived impact vs relevance of the indicators used to measure impacts of WIL (e.g., see Figure 1); the difference between impact assessments of PSIs and host organizations; and the rates at which employers hire WIL graduates and in areas related to the students’ undergraduate programs.

TABLE 2: Current version of WIL Impacts Framework for British Columbia

IMPACT DOMAIN	Subdomain*	Associated literature
TALENT DEVELOPMENT	Organizational talent	(Drewery et al., 2020; Larose Research & Strategy, 2020)
		(Bates, 2005; Patrick et al., 2008; Sattler & Peters, 2012)
		(Braunstein et al., 2011; Sattler & Peters, 2012)
		(Bates, 2005)
	Employability skills	(Government of Ontario, 2018; Patrick et al., 2008; Sattler & Peters, 2012)
		(Fleming & Haigh, 2017; Jackson, 2013, 2015; Jackson & Wilton, 2016)
		(Patrick et al., 2008; Peters et al., 2014)
		(Braunstein et al., 2011)
	Agency skills	(Fleming & Haigh, 2017)
		(Drewery et al., 2016; Fleming & Haigh, 2017; Jackson & Wilton, 2016; Wingrove & Turner, 2015)
	Academic success	(Crump & Johnsson, 2011)
		(Patrick et al., 2008)
(Jaeger, Eagan Jr., & Wirt, 2008)		
(Drysdale et al., 2016)		
PRODUCTIVITY	Work-related productivity	(Larose Research & Strategy, 2020)
		(Braunstein et al., 2011; Sattler & Peters, 2012)
		(Larose Research & Strategy, 2020)
	Associated productivity	(Larose Research & Strategy, 2020)
		(Bates, 2005)
INNOVATION CAPACITIES	Organizational innovation	(Braunstein et al., 2011; Crump & Johnsson, 2011; Fleming et al., 2016; Sattler & Peters, 2012)
	Macro-innovation	Primary data
		Primary data
		(Government of Ontario, 2018; Patrick et al., 2008)
		(Pretti et al., 2020)
		(Selznick et al., 2021)
DIVERSITY & EQUITY	Diverse and equitable workplace	(Braunstein et al., 2011; Sattler & Peters, 2012)
		(Metzger, 2004)
	Access to work for equity-deserving populations	Primary data
		Primary data
COMMUNITY DEVELOPMENT & ECONOMIC	Community building	(Peters et al., 2014; Sattler & Peters, 2012)
		(Patrick et al., 2008)
		(Patrick et al., 2008; Sattler & Peters, 2012)
		(Fleming & Haigh, 2017; Jackson & Wilton, 2016)
		(OECD, 2017)
		(Rampersad, 2020)
	Economic	(Government of Ontario, 2018; Patrick et al., 2008)
		Primary data
		(Downey et al., 2002; Haddara & Skanes, 2007)
		Primary data
Post-graduation Employment	(Blicblau et al., 2016)	
	Primary data	

* Details about indicators associated to each subdomain will be provided in a longer version of this paper

ACKNOWLEDGEMENTS

We gratefully acknowledge that this project was funded with support from the BC Ministry of Advanced Education and Skills Training Work-Integrated Learning Initiative.

REFERENCES

- Bates, L. (2005). Building a bridge between university and employment: Work-integrated learning. Brisbane, Australia: Queensland Parliamentary Library.
- Blicblau, A. S., Nelson, T. L., & Dini, K. (2016). The role of work placement in engineering students' academic performance. *Asia-Pacific Journal of Cooperative Education*, 17(1), 31-43.
- Braunstein, L. A., Takei, H., Wang, F., & Loken, M. K. (2011). Benefits of cooperative and work-integrated education for employers. In: R. K. Coll & K. E. Zegwaard (Eds.), *International Handbook for Cooperative & Work-Integrated Education (2nd ed.)* (pp. 277-286). Lowell, MA: World Association for Cooperative Education, Inc.
- CEWIL Canada (2021). "WHAT IS WORK-INTEGRATED LEARNING (WIL)?," <https://www.cewilcanada.ca/CEWIL/AboutUs/Work-Integrated-Learning/CEWIL/About-Us/Work-Integrated-Learning.aspx?hkey=ed772be2-00d0-46cd-a5b8-873000a18b41>
- Crump, S., & Johnsson, M. C. (2011). Benefits of cooperative and work-integrated education for educational institutions. In: R. K. Coll & K. E. Zegwaard (Eds.), *International Handbook for Cooperative & Work-Integrated Education (2nd ed.)* (pp. 287-294). Lowell, MA: World Association for Cooperative Education, Inc.
- Downey, J., Kalbfleisch, J. G., & Truman, R. D. (2002). Co-operative education: Greater benefits, greater costs. Submission to the Minister of Training, Colleges and Universities of Ontario by the Waterloo Centre for the Advancement of Co-operative Education.
- Drewery, D., Nevison, C., Pretti, T. J., Cormier, L., Barclay, S., & Pennaforte, A. (2016). Examining the influence of selective factors on perceived co-op work-term quality from a student perspective. *Asia-Pacific Journal of Cooperative Education*, 17(3), 265-277.
- Drewery, D., Pretti, T. J., & Church, D. (2020). Contributions of work-integrated learning programs to organizational talent pipelines: Insights from talent managers. *International Journal of Work-Integrated Learning*, 21(3), 275-288.
- Drysdale, M. T. B., McBeath, M. L., Johansson, K., Dressler, S., & Zaitseva, E. (2016). Psychological attributes and work-integrated learning: An international study. *Higher Education, Skills and Work-Based Learning*, 6(1), 20-34.
- Fleming, J., & Haigh, N. J. (2017). Examining and challenging the intentions of work-integrated learning. *Higher Education, Skills and Work-Based Learning*, 7(2), 198-210.
- Fleming, J., Pretti, J., & Zegwaard, K. (2016). Having a student around: What is the impact on the workplace team? Presentation at the 2016 International Conference of the New Zealand Association for Cooperative Education, Takapuna, NZ.
- Government of Ontario. (2018). Published plans and annual reports 2017-2018: Ministry of Advanced Education and Skills Development.
- Haddara, M., & Skanes, H. (2007). A reflection on cooperative education: From experience to experiential learning. *Asia-Pacific Journal of Cooperative Education*, 8(1), 67-76.
- Hay, K. (2020). What is quality work-integrated learning? Social work tertiary educator perspectives. *International Journal of Work - Integrated Learning*, 21(1), 51.
- Jackson, D. (2013). The contribution of work-integrated learning to undergraduate employability skill outcomes. *Asia-Pacific Journal of Cooperative Education*, 14(2), 99-115.
- Jackson, D. (2015). Employability skill development in work-integrated learning: Barriers and best practice. *Studies in Higher Education*, 40(2), 350-367.
- Jackson, D., & Wilton, N. (2016). Developing career management competencies among undergraduates and the role of work-integrated learning. *Teaching in Higher Education*, 21(3), 266-286.
- Jaeger, A. J., Eagan Jr., M., K., & Wirt, L. G. (2008). Retaining Students in Science, Math, and Engineering Majors: Rediscovering Cooperative Education. *Journal of Cooperative Education and Internship*, 42(1), 20-32.
- Larose Research & Strategy (2020). Work Integrated Learning (WIL) in BC: Trends, Issues, and Business Perspectives. Report presented to Association for Co-operative Education and Work-integrated Learning BC/Yukon and BC Chamber of Commerce on November 2020.
- McRae, N., Pretti, J.T., & Church, D. (2018). Work-Integrated Learning Quality Framework, AAA. CEWIL Canada, https://redstoneagency.imiscloud.com/common/Uploaded%20files/Public%20Resources/Resource%20Hub/wil_quality_framework_-_aaa_-_for_posting.pdf
- Metzger, S. V. (2004). Employers' perceptions of the benefits of college internship programs. *Journal of Cooperative Education*, 38(1), 45-52.
- Mills, A., Durepos, G., & Wiebe, E. (2010). "Encyclopedia of Case Study Research," <https://methods.sagepub.com/reference/encyc-of-case-study-research>

- Organisation for Economic Co-operation and Development (OECD). (2017). In-depth analysis of the labor market relevance and outcomes of higher education systems: Analytical framework and country practices report, [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=EDU/EDPC\(2017\)2&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=EDU/EDPC(2017)2&docLanguage=En)
- Patrick, C. J., Peach, D., Pocknee, C., Webb, F., Fletcher, M., & Pretto, G. (2008). The WIL [Work Integrated Learning] report: A national scoping study [Australian Learning and Teaching Council (ALTC) final report]. Brisbane: Queensland University of Technology.
- Pearce, J., Edwards, D., Fraillon, J., Coates, H., Canny, B. J., & Wilkinson, D. (2015). "The Rationale for and Use of Assessment Frameworks: Improving Assessment and Reporting Quality in Medical Education," *Perspectives on medical education*, 4(3), 110–18.
- Peters, J., Sattler, P., & Kelland, J. (2014). Work-integrated learning in Ontario's postsecondary sector: The pathways of recent college and university graduates. Toronto: Higher Education Quality Council of Ontario.
- Pretti, T. J., Parrott, P., Hoskyn, K., Fannon, A., Church, D., & Arsenault, C. (2020). "The Role of Work-Integrated Learning in the Development of Entrepreneurs," *International Journal of Work-Integrated Learning*, 21(4), 451–66.
- Rampersad, G. (2020). Robot Will Take Your Job: Innovation for an Era of Artificial Intelligence, *Journal of Business Research*, 116(May), 68–74.
- Sattler, P., & Peters, J. (2012). Work-integrated learning and postsecondary graduates: The perspective of Ontario employers. Toronto: Higher Education Quality Council of Ontario.
- Selznick, B. S., Dahl L., Youngerman, E., & Mayhew, M. (2021). Equitably Linking Integrative Learning and Students' Innovation Capacities, *Innovative Higher Education*, 47, 1-21.
- Stirling, A., Kerr, G., Banwell, J., MacPherson, E., & Heron, A. (2016). A Practical Guide for Work-integrated Learning: Effective Practices to Enhance the Educational Quality of Structured Work Experiences Offered through Colleges and Universities. Higher Education Quality Council of Ontario, <https://heqco.ca/pub/a-practical-guide-for-work-integrated-learning-effective-practices-to-enhance-the-educational-quality-of-structured-work-experiences-offered-through-colleges-and-universities/>
- Wingrove, D., & Turner, M. (2015). Where there is a WIL there is a way: Using a critical reflective approach to enhance work readiness. *Asia-Pacific Journal of Cooperative Education*, 16(3), 211-222.

Integration of workplace learning in an engineering course to strengthen regional development

KARTHIKA KRISHNA PILLAI
AMITA KRAUTLOHER
Charles Sturt University, NSW, Australia

INTRODUCTION

Workplace learning (WPL) in engineering is identified to have a powerful influence in developing the student's engineering professional identity. Though WPL is common in most undergraduate engineering courses at Australian universities, the duration and design of WPL in most universities hardly enable the professional identity development in students owing to the lack of opportunities for continuous development. This paper presents the case study of a WPL subject which uses the industry professional development review model, self-reflection and Interactive Orals (IOs) to scaffold and personalize the workplace learning and development of diverse cohorts. The study addresses how the unique assessment design caters to helping students develop their professional engineering identity while closing the gap of the skilled entry-level workforce in regional engineering industries. The results are vital in the continuous improvement of the WPL experiences of engineering students and employers in regional communities.

BACKGROUND

WPL in engineering course is organized as yearlong placements mostly with regional employers in the field of Civil Engineering. Currently, the cadets are spread all over New South Wales (NSW) and some parts of Queensland engaged in the construction of buildings, roads, water resources and other infrastructure projects.

The professional development of the cadets at their workplaces is assessed through the WPL subjects which increase with the level of complexity in the learning outcomes from year two to five. Due to the diversity of the cohort and workplaces, it was challenging to create assessments that were personalised and cater to the opportunities available at the workplace, as well as aligning with the learning outcomes of the WPL subject (Ajjawi et al., 2020). Thus, the student engagement and ownership of professional development in these subjects were limited leading to a lack of conscious development in the employability skills and the graduate attributes of professional practice, lifelong learning and sustainable practices. In addition, the active participation of industry and academic mentors in guiding the professional development of students was absent leading to a lack of an integrated effort in developing the skill requirements (Jackson et al., 2020) of regional industry.

Considering the above challenges, a pilot program was developed wherein the assessments in the WPL subject were redesigned and scaffolded, incorporating a new approach called interactive orals (Sotiriadou et al., 2020) with well-defined roles for academic and industry mentors.

METHODOLOGY

This subject falls under a broader longitudinal, mixed methods research project (for a duration of three years) at the university to investigate the outcomes of implementing interactive orals as assessments. The methods employed by the broader research include qualitative and quantitative data analysis of student surveys to assess the student learning experience. Student feedback is captured formally via a survey tool however the results are not yet available for detailed analysis. Hence, an autoethnographic approach (Ramalho-De-oliveira, 2020) was used in this study to analyse changes in student engagement as well as performance in the assessments (analysed thematically) for understanding the impact of revised assessment regime on student learning and regional industry.

ASSESSMENT STRUCTURE AND PARTNER ROLES

The learning outcomes of the WPL subject focus on reflectively developing workplace skills (Roessger, 2020) on professional accountability, systematic project management, and working in diverse teams. As the subject (and placement) is year-long, it is essential that there are specific touchpoints with the three stakeholders namely students, industry and academic mentors to ensure the learning outcomes of the subject are being met (Jackson, 2015). As such, four assessment items were designed and a backward design strategy (Cho & Trent, 2005) was adopted beginning with conceptualising assessment 4. This was because, soon after the year-long placement, students either graduate with an undergraduate degree or move ahead to a senior level of placement both of which involves increased workplace responsibilities and employability skills. To assess their readiness for the next level, an Interactive Oral (IO) assessment using a Job Interview scenario was designed to help both graduating and senior placement students to discuss and receive feedback on their professional development and future areas of improvement. This innovative approach to assessment ensures that they can communicate their professional development in ways other than writing and also offer unique opportunities to assess graduate learning outcomes such as lifelong learning and sustainable work practices.

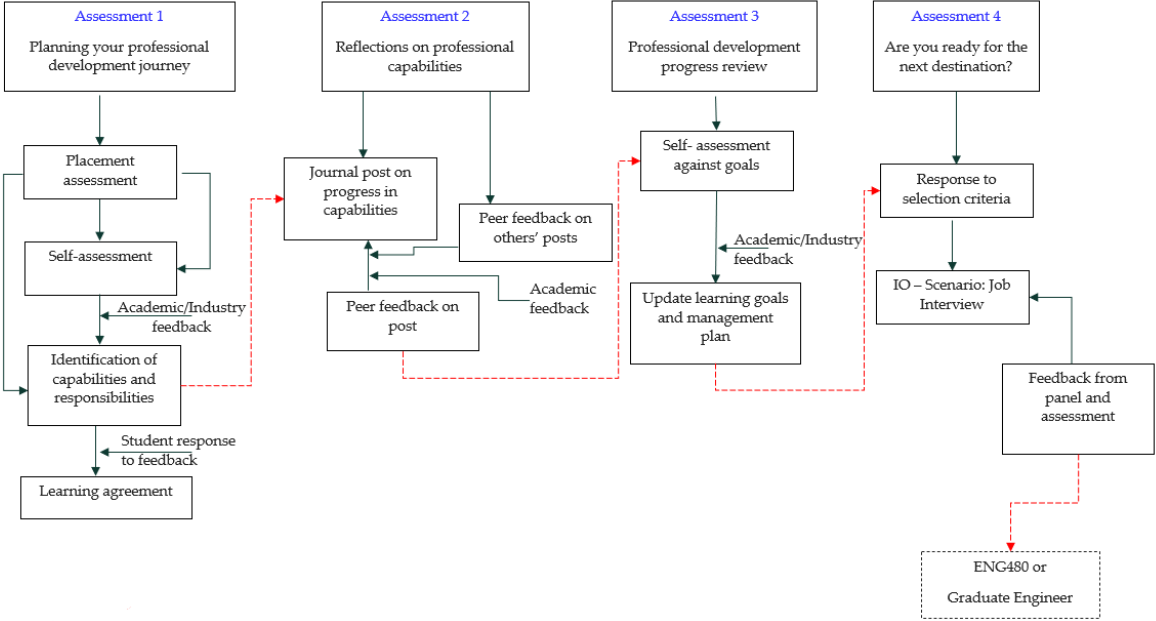
The identification of these future skills begins with assessment 1 wherein they self-assess their current professional development, opportunities at the workplace and develop professional goals for the improvement in skills. The industry mentor identifies the professional development opportunities at the workplace which in turn help them advance their work practices and contribution to the community. Academic mentors guide the student with the necessary theoretical background (achieved through on-demand online learning of topics) that is required to successfully accomplish their professional development goals.

The progress in professional development goals is reviewed and revised with inputs from both academic and industry mentors based on the workplace situations and academic requirements in assessment 3. In this assessment, students discuss their professional progress, challenges and opportunities with mentors in the setting of an informal performance review process. This resulted in creating ownership of professional development by the students while being supportively facilitated by both the industry and academic mentors.

The diversity of the student cohorts and their workplace opportunities provide a significant learning opportunity through peer-peer engagement. This is capitalised through assessment 2 wherein students reflect on their professional (goal) progress, share challenges and experiences through peer discussions. This ensures that students enrich the learning of peers, are connected and supportive as a cohort even while they are at diverse workplace locations.

A schematic diagram that shows the interdependency and scaffolding of assessments with mentor roles is presented in Figure 1.

FIGURE 1: Assessment structure in the case study subject



Each of the assessments is personalised to the professional development level of students and can be tailored according to the opportunities at their workplace. Assessment items are scaffolded to ensure the holistic development of students through reflection and timely intervention of mentors. The revised structure offers an opportunity for industry mentors to focus on the skill gaps and direct the student professional development to address the regional needs.

ASSESSMENT IMPACT ON STUDENT ENGAGEMENT AND SKILL DEVELOPMENT

The changes in the assessment strategy brought about an overall improvement in the performance and peer engagement of students in this subject. Thematic analysis of professional goals of students was conducted and it was found that assessment 1 showed a balance in the consideration of workplace commitments and professional development goals whereas in the previous delivery, it was more skewed towards workplace requirements. Considering the skill shortage and professional development of students, specific areas in engineering were identified as shown in Figure 2. Academic mentors

further supported the students to identify the soft skills (Figure 3) that complement their professional development goals.

FIGURE 2: Engineering specific development areas

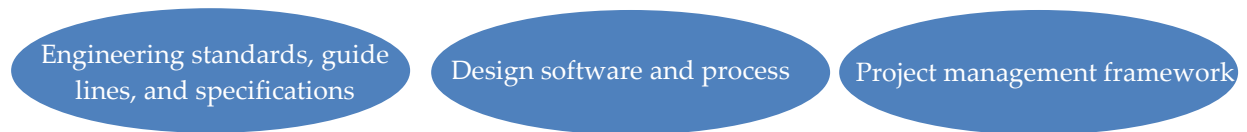
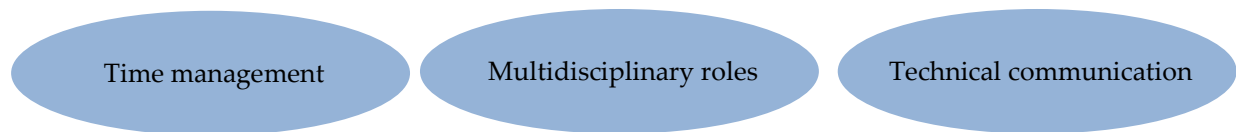


FIGURE 3: Soft skills improvement areas



The reflections of goal progress in assessment 2 lead to a conscious effort to practice what they learnt from peers, analyse the gaps in their professional development, seek opportunities in workplace and guidance from peers/mentors. Most of the students responded to three or more peer reflections to share their workplace experiences and provide inputs (often as further reference materials in the form of literature, podcasts etc.) to overcome the perceived challenges in skill development. It should be noted that in the previous assessment structure, peer interaction was practically nil. The thematical analysis of assessment 2 indicated the major challenge areas for the students as regional entry-level workforce as shown in Figure 4.

FIGURE 4: Preliminary areas of challenge from assessment 2



The anecdotal evidence from students on the interactive oral job interview in assessment 4 indicated that it provided them with a platform to express their professional development beyond what was submitted in written form (Part A). It also enabled them to think on their feet and apply their learning in other scenarios posed by the interviewer. Some of the students mentioned that the assessment helped them to prepare for the upcoming placement interview and in communicating their professional development. It was noticed that most of the students had a clear plan regarding future opportunities and skill development. As mentioned previously, the formal survey will be run after the grade release, the results can then be validated.

In addition to analysing the assessments, student engagement was also measured from the activity in the subject site. Figure 5 shows that though the maximum activity was during the assessment submission periods, they continued to access the subject site beyond assessment due dates for their

learning and professional development which was not observed during the previous delivery of the subject. The subject discussion forum was the most accessed area for peer-peer interaction during assessment 2 followed by the content area where the learning resources for further reference were shared (Figure 6).

FIGURE 5: Student access of subject site

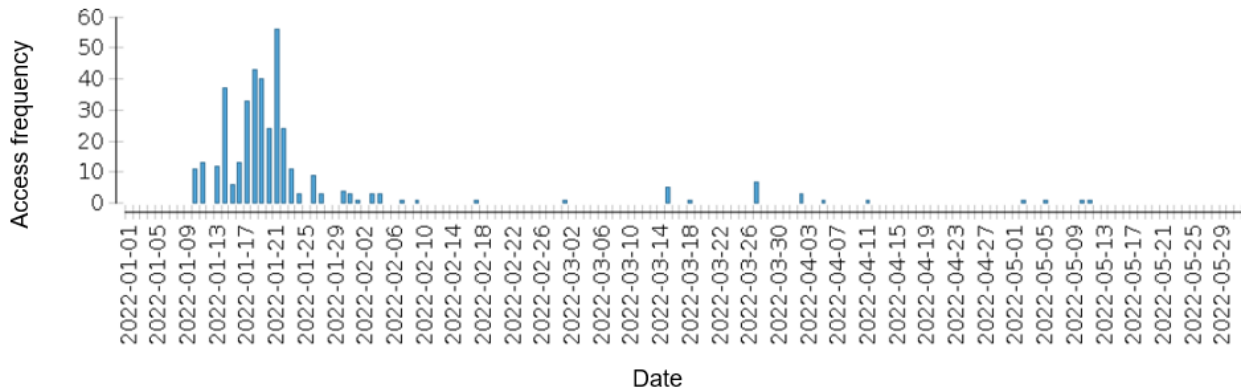
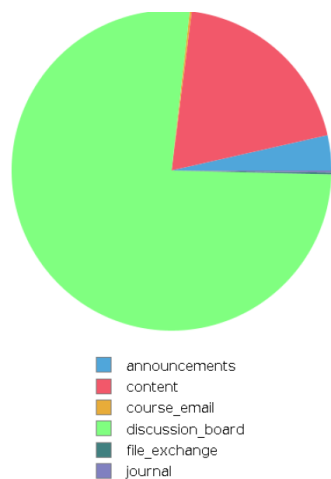


FIGURE 6: Student learning resources



DISCUSSION AND LIMITATIONS

The unique scaffolding of assessments incorporating industry professional development review, self-reflection and interactive orals resulted in increased engagement between students, industry and academic mentors and ownership of professional development goals. Providing well-defined roles for academic and industry mentors helped in aligning the professional development areas of students with the skill gap in the regional industry. Feedback from the industry mentors during periodic reviews of goals (assessment 3) ascertain that the contribution at workplace of the students from this subject has improved substantially in comparison to the previous offerings.

As the assessments are personalised for every student, it has eliminated/minimised academic integrity breaches (McArthur, 2022). The formal student survey will be run towards end of 2022 and hence the results from the case study are yet to be validated. Also, it requires the implementation of the assessment strategy in other WPL subjects across the course and in different disciplines for wider validation. Nevertheless, the assessment scaffolding described is generic and can be adapted and implemented in other disciplines.

CONCLUSION

The WPL students play a crucial role in filling the gap in the regional skilled labour force in engineering. The case study showcases the importance of innovative assessment techniques in WPL not only to ensure the achievement of subject learning outcomes and enhanced academic integrity but also to ensure that WPL acts as an opportunity for regional and student development. This is achieved via personalisation of assessments to suit the students' professional development and workplace requirements with timely integration of industry and academic mentor inputs. Although the case study presented includes only one subject, the results warrant the potential for improved student outcomes and employability skills through implementation in other WPL subjects from varying disciplines.

REFERENCES

- Ajjawi, R., Tai, J., Huu Nghia, T. L., Boud, D., Johnson, L., & Patrick, C.-J. (2020). Aligning assessment with the needs of work-integrated learning: the challenges of authentic assessment in a complex context. *Assessment and evaluation in higher education*, 45(2), 304-316. <https://doi.org/10.1080/02602938.2019.1639613>
- Cho, J., & Trent, A. (2005). "Backward" curriculum design and assessment: what goes around comes around, or haven't we seen this before? *Taboo* (New York, N.Y.), 9(2), 105.
- Jackson, D. (2015). Employability skill development in work-integrated learning: Barriers and best practice. *Studies in higher education (Dorchester-on-Thames)*, 40(2), 350-367. <https://doi.org/10.1080/03075079.2013.842221>
- Jackson, D., Riebe, L., Meek, S., Ogilvie, M., Kuilboer, A., Murphy, L., Collins, N., Lynch, K., & Brock, M. (2020). Using an industry-aligned capabilities framework to effectively assess student performance in non-accredited work-integrated learning contexts. *Teaching in higher education*, 1-20. <https://doi.org/10.1080/13562517.2020.1863348>
- McArthur, J. (2022). Rethinking authentic assessment: work, well-being, and society. *Higher education*, 1-17. <https://doi.org/10.1007/s10734-022-00822-y>
- Ramalho-De-oliveira, D. (2020). Overview and prospect of autoethnography in pharmacy education and practice. *American journal of pharmaceutical education*, 84(1), 156-165. <https://doi.org/10.5688/ajpe7127>
- Roessger, K. M. (2020). Assessment Strategies for Reflective Learning in the Workplace: A Pragmatic Approach [Article]. *Adult Learning*, 31(4), 175-184. <https://doi.org/10.1177/1045159520941947>
- Sotiriadou, P., Logan, D., Daly, A., & Guest, R. (2020). The role of authentic assessment to preserve academic integrity and promote skill development and employability. *Studies in higher education (Dorchester-on-Thames)*, 45(11), 2132-2148. <https://doi.org/10.1080/03075079.2019.1582015>

Realising the potential of teacher education in addressing the Sustainable Development Goals

CLARE POWER

Charles Sturt University, Bathurst, Australia

INTRODUCTION

Given that education is described as “crucial for the achievement of sustainable development” (UNESCO, 2017, p.7), teacher education is a critical site for integration of the Sustainable Development Goals (SDGs). Teacher Education programs require teacher education students (TES) to successfully engage in block placements of work-integrated learning which ideally presents opportunities for investigating and implementing sustainability within the school setting. While sustainability is complex and contested, a number of frameworks relevant to the teacher education context facilitate engagement with this concept. These include the SDGs, Education for Sustainability, the Australian sustainability cross-curriculum priority, and Graduate Learning Outcomes (GLOs) at a higher education institutional (HEI) level. This paper briefly outlines these frameworks before considering preliminary research conducted at an Australian university with teacher educators and TES to explore their understanding of the concept, and integration of sustainability in teacher education courses and work-integrated learning (WIL). WIL in the teacher education context is referred to as professional experience and will be referred to as this throughout the paper.

HIGHER EDUCATION CONTEXT

Each of the SDGs are relevant to teacher education, although Goal 4: ‘Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all’ is specific to this discipline (United Nations, 2015). Integral to the 2030 Agenda for Sustainable Development (Agenda 30), the SDGs address the breadth of crises confronting humanity and the planet. It must be noted that sustainable development is not a neutral term as it is conceptualised within a paradigm that privileges economic growth as a developmental path (Kopnina, 2020). Nevertheless, many HEIs have adopted Agenda 30 and researchers apply the SDGs as lenses for investigating work-integrated learning and sustainability (for example: Cordoba & Bando, 2021; Ivković & McRae, 2021; Wall et al. 2017). Furthermore, adoption of the SDGs can promote sustainability literacy which can be fostered through the education system.

Education for Sustainability (EfS) is a variously interpreted approach which encompasses multiple perspectives including UNESCO’s Education for sustainable development (ESD) (2017) and Andreotti’s critique of Education’s ‘complicity in the reproduction of unsustainability’ (2021, p.143). In alignment with Agenda 30, UNESCO describes ESD as ‘holistic and transformational education’ which reorients from a focus on teaching to supporting self-directed, participatory and trans-disciplinary learning (2017, p.7). UNESCO maintains that ESD is concerned with empowering learners to take ‘informed decisions and responsible actions for environmental integrity, economic viability and a just society for

present and future generations’ (p.7). In practice however, EfS/ESD is not widely integrated into teacher education courses (Tomas et al., 2017).

Within the Australian educational context, sustainability is a national cross-curriculum priority through which ‘students develop the knowledge, skills, values and worldviews necessary to contribute to more sustainable patterns of living’ (Australian Curriculum, 2015). This priority is underpinned by three key concepts: global systems interdependence, diverse worldviews and building student capacity for thinking and acting toward a sustainable future. However, as one of the many competing elements that TES and teacher educators juggle, this priority can be sidelined due to factors such as an already crowded curriculum and lack of leadership support or training (Mills & Tomas, 2020).

Finally, at an institutional level, many HEIs use Graduate Learning Outcomes to integrate competencies into a degree. Much of the literature that analyses the application, impact and utility of GLOs considers students’ skillsets and their transferability in the employment context (e.g., Matthews & Mercer-Mapstone, 2016; Oliver & Jorre, 2018). At this university, which subscribes to Agenda 30, the Sustainable Practices GLO specifies the characteristics of the university graduates as ‘agents of change who engage with ethical and sustainable practices that meet the needs of the present without compromising the ability of future generations to meet their own needs and those of the environment’ (Charles Sturt University, 2020). This GLO can be seen to align broadly with the SDGs, and, as the institutional framework for sustainability, informed the research design.

METHODOLOGY

The research discussed in this paper was conducted with TES and Teacher educators at a university based in regional Australia. Online surveys were administered to both participant groups (Human ethics approval: H20047). These surveys comprised demographic information, and predominantly qualitative open-ended questions focussed on TES and Teacher Educators personal understanding of sustainability, and its incorporation in TES’ coursework and professional experience, with some specific reference to the university’s Sustainable Practices: GLO. Teacher educators were asked similar questions to TES, but from the perspective of teaching and observing student learning. Participants’ comments were analysed through iterative coding whereby emergent themes were identified (Creswell, 2018).

TES who had completed a minimum of one professional experience placement were invited to participate in the research. The 35 TES who responded represented Primary (54%) Secondary (37%) and Early Childhood Education (8%) cohorts. 70% of respondents had undertaken two or more professional experience placements. Of the 18 teacher educators who completed the survey, 60% were employed as permanent staff and 72% had taught professional experience subjects.

FINDINGS

Teacher Education Students

The research found that TES' articulation of sustainability was primarily related to environmental concerns. The most prominent theme was not depleting resources for future generations, with some reference to renewables and recycling. For example: *'Sustainability means to be able to maintain living standards without depleting the planet of its natural non-renewable resources'*. This was largely replicated in TES' explanations of Education for Sustainability with responses focussing on environmental education, although one third of participants had not encountered the term previously.

The wording of the Sustainable Practices GLO was provided within the survey. 80% of respondents were not aware of this GLO, and 60% indicated they had not encountered sustainable practices during their Teacher Education studies. Responses included: *'I found in my studies that sustainability did not get as much attention as I thought it would'* and *'As a cross-curricular priority, I think it got the least attention'*.

In relation to TES' professional experience, 50% responded that they had been required or chosen to include sustainable practices during their professional experience, while 45% responded that they had not. TES who responded in the negative included definitive comments such as: *'No requirements have been made during PEX to include sustainable practices'* and *'Sustainable practices were never enforced'*. More specifically one TES noted: *'My placement experiences were disconnected from future orientation'*.

The lack of opportunity to engage with sustainable practices was ascribed to it not being a priority at the site of their professional experience. One TES noted: *'I don't think it's [sustainability] a focus for the average practicing teacher'*. Another TES responded: *'I think schools probably don't value it as highly as they should'*. Nevertheless, several TES referred to the role of school teachers in promoting sustainable practices: *'I hope to use my position as an educator to help make students more aware of ways we can work towards developing a sustainable society'*, and *'It is important that we value sustainability and pass on that attitude to students where we can'*.

Three main themes emerged in responses from TES who affirmed they were required or chose to include sustainable practices during placements: self-motivation, as part of the school's practices or subject-related. Several TES indicated their practices were motivated by their personal values: *'I am generally seeking to minimise my ecological footprint'* and *'While not asked to include sustainable practices, I include these in my teaching'*. Engaging in school-based environmental initiatives such as recycling, waste and water management, kitchen gardens and composting were provided as examples of sustainable practices during professional experience.

Specific subjects seemed to offer most scope for incorporating sustainable practices: TES described Human Society and Environmental studies, Technological and Applied Studies (TAS) and Indigenous education as sites for investigating or implementing sustainable practices. For example: *'All the TAS subjects I teach now have a strong inclusion of sustainability practices built into their respective syllabuses'* and *'I was expected to embed sustainability within my lessons and units of work to teach students about the importance of sustainability'*. Only two TES referred to the sustainability cross-curriculum priority: *'I was aware of*

this to the extent that it is a cross-curriculum priority and needs to be considered across all subjects' and 'The Sustainability cross-curriculum priority was also expected throughout both of my professional experiences'.

Teacher Educators

A more expansive understanding of sustainability was reflected overall in teacher educators' responses as they tended to include the three pillars of sustainability; environmental, social and economic. One teacher educator described sustainability as 'Looking at not only natural resources but also ensuring we are socially and economically sustainable'. Teacher educators were more familiar with the concept of EfS than TES and responses included 'educating students to implement and facilitate sustainability in classrooms'. One respondent took a more justice oriented global view: EfS means developing teaching and learning practices that enhance the lives of individuals and the whole community. There is also a responsibility to emancipate those whose choices have been compromised'.

In contrast to the TES, a majority (83%) of teacher educators were aware of the Sustainability Practices GLO with 64% responding that it was included in subject content. One respondent noted: I am not convinced that students are very aware of the sustainable practices GLOs explicitly - although it is there implicitly in a number of EPT [professional experience] subjects'. 55% of respondents replied that they were aware of sustainable practices being included in professional experience, however 45% were not. Examples provided related more to what they expected students would encounter, rather than concrete examples. Some responses linked to school specific initiatives, and only two respondents referred to the sustainability cross-curriculum priority, both pointing out that it is not consistently or explicitly incorporated in placements: It's more of an underlying theme than an explicit focus and it tends to emerge organically in the teaching and learning cycle' and ' To my knowledge it is not an actively focused nor ongoing process within the professional experience subjects'. Another teacher educator spoke to the potential professional experience to contribute to sustainable practices: 'I do think that the partnerships we have with schools help to develop this. Students contribute a great deal to educational communities in their practicums'.

DISCUSSION

Through this preliminary research a disjuncture was identified between application of the University's Sustainable Practices GLOs, TES' lived experience and teacher educators' perceptions.

The four frameworks introduced earlier in this paper provide possibilities for integration of sustainability into teacher education professional experience. However, survey respondents made little reference to these. Although TES identified sustainability as an area of personal concern and pedagogical responsibility, this tended to be related primarily to environmental concerns which although critical, can be a reductionist approach to sustainability. TES' experience of sustainability during professional experience was limited and tended to be context dependent, through specific subjects or driven by personal motivation. Similarly, teacher educators noted that sustainable practices tend not to be an explicit focus in courses or professional experience. They conveyed a more holistic understanding of sustainability, but this did not seem to translate into consistent integration across teacher education courses.

The approach taken to sustainability and work-integrated learning at this institution aligns with Edwards et al.'s (2015) model of 'trust transfer will happen', whereby rather than an explicit focus on sustainability, there is an assumption that students will apply any learning about sustainability outside their studies (cited in Wall & Hindley, 2019 p.2100). Such an approach also fails to recognise the range of transferable competencies including critical thinking and problem-solving skills, working with complexity and a deep understanding of the multi-layered, intersecting components of sustainability (UNESCO, 2017; Wall et al., 2017).

CONCLUSION

Teacher Education is a vital space for embedding the intent of the Sustainable Practices GLO and the SDGs. However, without explicit focus this may remain an ad hoc process, dependent on the motivations of individual TES and teacher educators. Given the adoption of the SDGs by many HEIs, they provide a framework for realisation of sustainable practices in courses and professional experience. Furthermore, as seen in this preliminary research, sustainability is often reduced to environmental concerns only, and the SDGs can be an important mechanism for expanding this understanding. Where the SDGs inform teacher education programs, it is recommended that to enable transformative possibilities this requires critically interrogated and systemic approaches rather than merely a compliance orientation.

REFERENCES

- Andreotti, V. De Oliveira. (2021). The task of education as we confront the potential for social and ecological collapse, *Ethics and Education*, 16 (2), 143-158, DOI: 10.1080/17449642.2021.1896632
- Australian Curriculum. (2015). Cross-curriculum priorities (Version 8.4). <https://www.australiancurriculum.edu.au/f-10-curriculum/cross-curriculum-priorities/>
- Charles Sturt University. (2022). Graduate learning outcomes. <https://www.csu.edu.au/division/learning-teaching/courses/graduate-learning-outcomes>
- Cordoba, P.S., & Bando, L. (2021). Social Work and the Sustainable Development Goals: A Student Placement Model, *Australian Social Work*, DOI:10.1080/0312407X.2021.1947335
- Creswell, J. W. (2018). *Research design : qualitative, quantitative, and mixed method approaches* (5th edition). SAGE.
- Edwards, D., Perkins, K., Pearce, J., & Hong, J. (2015). Work Integrated Learning in STEM in Australian Universities. Final Report submitted to the Office of the Chief Scientist. Australian Council for Educational Research. https://research.acer.edu.au/cgi/viewcontent.cgi?article=1046&context=higher_educationScientist
- Ivković, S.S., & McRae, N. (2021). Improving engagement of interns and employers with the United Nation's Sustainable Development Goals. *International Journal of Work-Integrated Learning*, Special Issue: The practice and research of cooperative education and work-integrated learning in the Canadian context, 22(3), 345-356.
- Kopnina, H. (2020). Education for the Future? Critical Evaluation of Education for Sustainable Development Goals, *The Journal of Environmental Education*, 51 (4), 280–291.
- Matthews, K.E., & Mercer-Mapstone, L.D. (2018). Toward curriculum convergence for graduate learning outcomes: academic intentions and student experiences. *Studies in Higher Education*, 43, (4), 644-659
- Mills, R., & Tomas, L. (2020). Realising the Sustainability Cross-Curriculum Priority Through Action-Oriented and Transformative Geography Education, *Geographical Education*, 33, 11-17.
- Oliver, B., & Jorre de St Jorre, T. (2018). Graduate attributes for 2020 and beyond: recommendations for Australian higher education providers, *Higher Education Research & Development*, 37(4), 821-836, DOI: 10.1080/07294360.2018.1446415
- Tomas, L., Girgenti, S., & Jackson, C. (2017). Pre-service teachers' attitudes toward education for sustainability and its relevance to their learning: implications for pedagogical practice, *Environmental Education Research*, 23 (3), 324-347, DOI: 10.1080/13504622.2015.1109065
- United Nations. (2015). Sustainable Development Goals. <https://sdgs.un.org/goals>
- UNESCO. (2017). Education for Sustainable Development Goals: Learning Objectives. <https://unesdoc.unesco.org/ark:/48223/pf0000247444>

- Wall, T., Hindley, A., Hunt, T., Peach, J., Preston, M., Hartley, C. & Fairbank, A. (2017). Work-based learning as a catalyst for sustainability: a review and prospects, *Higher Education, Skills and Work-Based Learning*, 7 (2), 211-224
- Wall, T., & Hindley, A. (2019). Work-Integrated Learning for Sustainability Education. In W. L. Filho (Ed.), *Encyclopedia of Sustainability in Higher Education*, p. 2098 – 2013. <https://doi.org/10.1007/978-3-030-11352-0>

Waterloo Experience Accelerate: Exploring a specialized work-integrated learning program and its application to support work-readiness

ANDREA PRIER
ANNE-MARIE FANNON
JAMIESON COX
SUMAN ARMITAGE
University of Waterloo, Waterloo, Canada

INTRODUCTION

The Waterloo Experience Accelerate (WEA) program was created in response to the COVID-19 pandemic, which posed an unprecedented challenge to student employment within the University of Waterloo's (UW) co-operative education (co-op) program. UW runs a large, centralized co-op program with over 22000 work terms per year (University of Waterloo, 2020) where students complete 4-6 four-month, paid work terms, secured through a competitive job search. Following the onset of the pandemic, the employment rate for paid work terms dropped by over 25% (Kay et al., 2020). With fewer employment opportunities, students enrolled in academic courses. This created an administrative strain on the Faculties that, if continued, could have caused a significant trickle-down effect on degree progression and co-op sequencing. To mitigate the employment challenges, WEA was developed for unemployed first-work term (FWT) students. Longer term, this program may have the potential to provide ongoing support to FWT students as a Work Readiness Program.

PROBLEM EXPLORATION

Ninety-seven per cent of co-op students at UW find employment which amounts to over 22000 paid work-terms per year. However, of all the students, FWT students have the lowest employment rates at 94% (University of Waterloo, 2020). Limited research has been conducted on this FWT population, but anecdotal evidence suggests that some FWT students may benefit from specialized WIL programming beyond a traditional co-op work-term. To begin to understand why this might be, first we must understand who is considered typically 'at-risk' to remain unemployed for their FWT and if there were any discernible student attributes of those participating in WEA. Longer-term, this will help inform if WEA can be positioned as a Work Readiness Program, ensuring FWT students have an alternative option to attaining their co-op credit if they are unable to secure paid employment.

LITERATURE REVIEW

Who is Considered Typically 'At-Risk' in Work-Integrated Learning (WIL)?

Emerging literature suggests that language and cultural challenges for international students, physical and attitudinal barriers for students with disabilities, and inhospitable placement environments for LGBTQ2+ and female students in STEM are often barriers to students engaging in WIL (Arthur & Guy, 2020; R.A. Malatest & Associates Ltd., 2018; Newhook, 2016). As well, operational structures surrounding WIL placements, and additional systematic, albeit unintentional “sorting mechanisms” (e.g. GPA as a part of the recruitment process, interview skills, and ability to relocate for a placement) can further the inequality for these already underrepresented students (Cukier et al., 2018; Itano-Boase et al., 2021; R.A. Malatest & Associates Ltd., 2018).

An important step towards success in WIL often involves securing the first WIL experience, particularly in programs where placement is not guaranteed. A lack of previous work experience can also be a barrier to participation. Although WIL programs are built to provide experience, employers can bias candidates who already have it (Cukier et al., 2018). Further, remaining unemployed after a competitive WIL process may have a negative effect on students' emotional well-being (Cormier & Drewery, 2017) and may prevent further progression in their studies (Drewery et al., 2019).

While barriers to WIL placements exist, WIL participation has also been shown to positively influence traditionally underrepresented populations. WIL offers interactions with industry, the opportunity to connect to a professional community, and exposure to potential career sectors that may not have been considered (Adjapong et al., 2016; Cukier et al., 2018; Doherty, 2011). To better understand if alternative programming can help support WIL students who are 'at risk' to remain unemployed for their FWT, we need to know who these students are and the extent to which they participate in existing programming.

PROGRAM DESIGN

Curriculum

WEA curriculum was designed to provide students with knowledge, skills, and experience to enhance future employability. First, students received in-demand skills training co-created with industry partners. The in-demand skills were identified by analyzing skill requirements listed in over 74,000 co-op jobs posted between 2017 and 2020. Second, students used their new skills to complete an interdisciplinary team-based project for an employer client. Third, students received career education at the program's beginning and end.

Program Structure

WEA was structured to remove many barriers toward participation. Acceptance in the program was automatic and while GPA is a factor for participation in co-op, there were no additional GPA requirements for participation in WEA. Successful completion of WEA allowed participants to stay on track with their co-op requirements and take on part-time employment or course-work.

METHODS

A data set was composed of 5866 students scheduled to enter their first-work term between Spring 2021 and Fall 2022. This data set included: students' academic standing in the academic term before their scheduled FWT (good, conditional, failed); their preferred gender (undisclosed, male, female); and their citizenship status (visa student, permanent resident, citizen of Canada). Only students with complete records across all variables were included in the analysis.

To begin to understand students who are considered 'at risk' to remain unemployed for their FWT, academic standing, gender, and citizen status were compared via chi-square analysis using the following research question:

- Are there observable patterns in (academic standing OR gender, OR citizen status) in first-year students who remain unemployed for their FWT versus their employed counterparts?

To begin to understand students who opted into WEA for their FWT, academic standing, gender, and citizen status were also compared via chi-square analysis using the following research question:

- Are there observable patterns in (academic standing OR gender, OR citizen status) in first-year students who opt into WEA versus those who choose to remain unemployed in their first-work term?

RESULTS

Our initial analysis of who may be 'at-risk' to remain unemployed for their FWT suggests:

1. *Employment may depend on academic standing.* The relationship between academic standing and those who remain unemployed for their FWT versus their employed counterparts was significant, $X^2(2, n=5866) = 108.14, p = .001$. Trends in the data suggest that those in good standing may be more likely to find employment in their first-work term than those in conditional or failed standing.
2. *Employment may depend on gender.* The relationship between gender and those who remain unemployed for their FWT versus their employed counterparts was significant, $X^2(2, n= 5866) = 40.7, p = .001$. Trends in the data suggest that females may be more likely to find employment in their first-work term than males or undisclosed gender.
3. *Employment may depend on citizenship status.* The relationship between citizenship and those who remain unemployed for their FWT versus their employed counterparts was significant, $X^2(2, n = 5866) = 63.25, p = .001$. Trends in the data suggest that permanent residents and visa students may be less likely to find employment in their first-work term than Canadian citizens.

Our initial analysis of who 'opted in' to WEA for their FWT suggests:

1. *Participation in WEA may depend on academic standing.* The relationship between academic standing and participation in WEA was significant, $X^2(2, n=1056) = 19.79, p = .001$. Trends in the data suggest that those in good standing may be more likely to 'opt in' to the program after FWT search failure than those in conditional or failed standing.

2. *Participation in WEA does not depend on gender.* The relationship between gender and participation in WEA was not significant, $X^2(2, n=1056)=1.80, p = .405$.
3. *Participation in WEA may depend on citizenship status.* The relationship between citizenship and participation in WEA was significant, $X^2(2, n = 1056) = 21.89, p = .001$. Trends in the data suggest that visa students may be more likely to participate in WEA than Canadian citizens or permanent residents.

DISCUSSION

Consistent with emerging literature (e.g. R.A. Malatest & Associates Ltd., 2018), barriers to entry into first-work term employment exist for those with poor academic standing and permanent resident and visa students. Literature on gender and the ability to secure work term employment is limited. Still, our findings, which suggest that males were disproportionately unemployed, compliments the work of Chopra et al. (2020). In their study of gender differences in STEM disciplines, it was found that women in engineering may have a slight advantage in securing employment.

Trends in the data suggest that those in good standing tend to be more likely to 'opt in' to WEA than those in conditional or failed standing. Because WEA provided a guaranteed FWT credit, students in good academic standing may have been more motivated to maintain their standing and progression by signing up for this new WIL opportunity. Visa students were also more likely to participate in WEA than Canadian citizens or permanent residents. Several program design features could explain this trend, including WEAs mostly asynchronous design. Many international students were in their home countries and could not legally earn income from Canadian organizations due to barriers imposed by the pandemic. Therefore, guaranteed acceptance into a program providing Canadian WIL experience may have been appealing. Finally, there were no significant trends in the data for gender and participation in WEA. However, gender differences in WEA participation rates between faculties has yet to be explored, and may have implications for the program based on emerging literature (e.g. Chopra et al., 2020).

LIMITATIONS

A very simplistic analysis (chi-square) was used to determine the initial patterns we might see in these data. These patterns of association do not tell us why these students did not find employment or why they participated in WEA. Initial effect size analysis suggests that we should not draw definitive conclusions from these results and that further analysis should be completed.

An additional limitation of this research is the data set used for this analysis. The data set was derived from eligible first-work term students during the pandemic when conditions for FWT searches were quite exceptional. Thus, this analysis should not be considered representative of a "typical" FWT cohort.

Finally, this analysis was conducted on a limited set of variables which is not representative of the full spectrum of equity deserving groups. We need better demographic data on our students to better understand who is 'at risk' of FWT unemployment.

CONCLUSIONS/IMPLICATIONS

This initial analysis has helped us begin to delve into the phenomenon of 'first-work term unemployment and participation in specialized WIL programming.' As we start to explore longer-term implications for WEA and if it can be positioned as a Work Readiness Program, three key takeaways warrant additional consideration:

1. As students with lower academic standing are already at risk of being excluded from work-integrated learning programs, continued research to understand better ways to engage with FWT students with lower academic standings is necessary.
2. Since the literature and our initial analysis suggests that visa students are typically 'at-risk' to remain unemployed for their FWT, a focus on WEA's intentional program design would ensure access to a work readiness program for this population. Further research will validate which pieces of the program design were appealing because of the barriers imposed due to the pandemic versus systemic barriers associated with working in Canada as a visa student.
3. While consistent patterns in gender were not apparent in the literature and our initial analysis, ensuring the core components of a WEA work readiness program support commonly associated barriers to entry for all students may further support access to the program. For example, employing universal design features in the curriculum and removing any structural barriers associated with students being eligible for the program like GPA minimums, application packages, interviews, and a need to relocate to participate.

Continued exploration will ensure FWT students who fail to secure traditional co-op employment have an alternative option to remaining unemployed. If positioned appropriately during the FWT, a specialized program like WEA may allow these traditionally unsuccessful students to develop relevant knowledge, integrate their academic learning with a work experience, and establish connections with professionals who act as their mentors. This opportunity thereby creates an on-ramp for students to join their co-op cohort for the next round of work experience equipped with skills and a new sense of confidence about their employability and how to articulate their strengths.

REFERENCES

- Adjapong, E. S., Levy, I. P., & Emdin, C. (2016). Empowering Girls of Colour Through Authentic Science Internships. *Journal of Urban Learning, Teaching, and Research (JULTR)*, 12, 24-34.
- Arthur, B., & Guy, B. (2020). "No, I'm not the secretary": Using participatory methods to explore women engineering students' experiences on co-op. *International Journal of Work-Integrated Learning*, 21(3), 211-222.
- Chopra, S., Khan, A., Mirsafian, M., & Golab, L. (2020). Gender differences in work-integrated learning experiences of STEM students: From applications to evaluations. *International Journal of Work-Integrated Learning*, 21(3), 253-274.
- Cormier, L., & Drewery, D. (2017). Examining the effect of co-op non-employment and rejection sensitivity on subjective well-being. *Asia-Pacific Journal of Cooperative Education*, 18(3), 213-224.
- Cukier, W., Campbell, M., & McNamara, L. (2018). Ensuring equitable access to work-integrated learning in Ontario.
- Doherty, L. (2011). Filling the female political pipeline: Assessing a mentor based internship program. *Journal of Political Science Education*, 7(1), 34-47
- Drewery, D. W., Cormier, L. A., Pretti, T. J., & Church, D. (2019). Improving unmatched co-op students' emotional wellbeing: Test of two brief interventions. *International Journal of Work-Integrated Learning*, 20(1), 43-53.
- Itano-Boase, M., Wijesingha, R., Cukier, W., Latif, R., & Hon, H. (2021). Exploring diversity and inclusion in work-integrated learning: An ecological model approach. *International Journal of Work-Integrated Learning*, 22(3), 253-269.
- Kay, J., McRae, N., & Russell, L. (2020). Two institutional responses to work-integrated learning in a time of COVID-19: Canada and Australia. *International Journal of Work-Integrated Learning*, 21(5), 491-503.

Newhook, R. (2016). Are university co-operative education students safe? Perceptions of risk to students on work terms. *The Canadian Journal of Higher Education*, 46(1), 121-137

R.A. Malatest & Associates Ltd. (2018). *Barriers to Work-integrated Learning Opportunities*. Toronto: Higher Education Quality Council of Ontario.

University of Waterloo. (2020). *2020 Co-operative Education Annual Report*. University of Waterloo.
<https://uwaterloo.ca/co-operative-education-annual-report/>

Meeting the technical needs of Technical, Vocational, Education and Training College lecturers through work-integrated learning

MABU L.P. RAPHOTLE
ETDP SETA, Johannesburg, South Africa

INTRODUCTION

The outbreak of the COVID-19 contagion in late 2019 will force the institutions, especially TVET Colleges to explore new and not-so-new initiatives that can be implemented without exacerbating the spread. The work-integrated learning (WIL) programme is one such programme, especially the one that focuses on TVET College lecturers. The practice of exposing the TVET College lecturers, through WIL, in South Africa is relatively new and as such there seems to be conceptual confusion in terms of terminology and practice. This is according to the Education, Training and Development Practice Sector Education and Training Authority's (ETDP SETA) (2018) commissioned study entitled '*Identifying the current practice and staff development needs of TVET college staff in terms of Work Integrated Learning (WIL)*'. While WIL for students is clear and well defined, there was confusion amongst the 50 TVET Colleges in South Africa, as to what is WIL for lecturers and what does it entail.

Therefore, in spite of the South African Department of Higher Education and Training (DHET) introducing a policy requiring practicing TVET College lecturers' placement in industry to acquire skills and improve their quality of teaching (Taylor, 2017), research show that not many lecturers take time off to visit Industry as part of their professional teaching and learning practice. There are various reasons for this, the key being a lack of a structured WIL programme that TVET Colleges can use to place their lecturers. While the South African public universities have been mandated by the DHET to conceptualise a structured WIL component as part of the TVET College lecturer qualification development, this has been a slow process and where qualifications have been developed, they have been restrictive because they require the lecturer to enrol for the entire qualification instead of just a WIL programme component.

It is against this background that the purpose of this paper is to use the lessons learnt from a project of exposing TVET College lecturers to industry, implemented by the ETDP SETA in partnership with the Swiss South African Cooperation Initiative (SSACI), to argue for:

- the development or conceptualisation of a structured WIL programme for TVET College lecturers;
- involvement of business/industry in the development of such a programme; and
- using the SSACI WIL programme as a possible model.

LITERATURE REVIEW

An overview of literature indicates a growing interest in TVET College lecturer development and best practice with regards to WIL. The importance of preparing students to enter the world of work through WIL in the post school education and training system has been documented by several authors (Cole & Thompson, 2002; Evers et al., 1998; Martin et al., 2000; Peddle, 2000). It is generally accepted that, if WIL is well-planned and implemented effectively and efficiently, students' employability skills are enhanced, and students become work ready upon graduation.

As lecturers are responsible for effective and efficient planning and implementation of WIL (which is a cornerstone for TVET), the need for lecturer development through formal qualifications in the TVET sector is documented (RSA, 2013; Cosser, 2010; Martin & Hughes, 2009; Wessels, 2005). Cosser, (2010) maintains that, for the education and training system to provide quality WIL programmes, it requires high quality lecturers to enhance the quality of teaching and learning. In line with this view, Wessels (2005) points out that it is essential for academic staff to "monitor the progress of the students in terms of pre-defined learning objectives for the programme, in order to maintain an effective system of work-integrated learning" (p.51). Lecturer capacity development in the TVET sector is guided by the policy framework for TVET lecturers (RSA, 2013). This policy framework requires that lecturers' certification and professional development include both school-based teaching practice and industry-based WIL.

According to Taylor and Van der Bijl (2018) the industry-based WIL for lecturers is a new requirement of the initial professional qualifications for South African TVET lecturers, but that "...there is already practice of lecturers visiting industry for workplace exposure" (p.132). Such practice was underpinned by the SSACI's WIL for lecturer's programme called 'Lecturer Workplace Experience' (LWE). The programme, which is not accredited but structured, entails the completion of a minimum of 5 days in a workplace, over a period of 13 to 14 months, and the submission of SSACI's structured WIL for lecturer's portfolio of evidence (PoE), with lecturers receiving a participation certificate after the PoE has been assessed (Taylor, 2013).

DESCRIPTION OF THE PILOT

In the latter part of 2014, ETDP SETA partnered with the SSACI to pilot a programme exposing TVET lecturers to their relevant industry. The objective of this two-year pilot was to formalise WIL for lecturers with a mutual understanding and structured model, so that it could be institutionalised in the colleges (Smith, 2015).

The Pilot Project involved twenty-eight out of 50 South African public TVET Colleges, with the initial 280 lecturers earmarked to participate in the programme in 2014. According to Smith (2015, p. 9) the 280 lecturers targeted to complete WIL was exceeded by far. By the end of 2016, over seven hundred lecturers had completed SSACI's training on WIL for lecturers and at least 500 had been exposed to industry. Smith (2015) further contends that apart from positive feedback from lecturers on their experience in industry, it was too early to tell whether the lecturers have incorporated their industry experience into their classroom practice. However, Taylor and Van der Bijl (2018, p.136) argues, to the contrary, that

It is clear that participation in WIL enhanced the lecturers' knowledge of their subject and its application in industry, and that those who engaged in workplace activities enhanced their skills and experience. The lecturers also learned about employer requirements for different jobs and about changes in their industry.

The success of the project also highlighted the importance of partnerships with stakeholders in the technical and vocational sector. The ETDP SETA-SSACI partnership illustrated how key players, with different expertise, can collaborate to achieve a common goal. Smith (2015, p. 8-9) indicates that the ETDP SETA, as a facilitator of skills development, did not have the structure, the model, and the capacity to implement it at a national level. While SSACI's knowledge and experience of the TVET college sector, as well as its deep understanding of curriculum issues and learning processes, made it a suitable partner to implement the project. The results and successes, in relation to employer participation, of the pilot are summarised in the Table 1.

TABLE 1: Results of employer participation.

How were lecturers selected for WIL?	Most respondents (62%) were selected to participate by their colleges. Twenty-six percent volunteered and 12% were selected by their college but given a choice.
When did the lecturers do their WIL?	Most did WIL during holiday time (53%). Some combined holiday and term time (17%) and 16% did it only in term time. Seven percent completed their WIL during exam time and 7% went at other times.
Placement days	Most completed at least 5 days in a workplace (54%). Sixteen percent completed 1 to 4 days, 20% completed 6 to 10 days and 10%, more than 10 days.
Type of employer visited	Most went to private companies (62%). Government departments and state-owned enterprises accounted for 23% and 7% respectively. Non-government organisations hosted 7%.

The success of this Pilot Project has illustrated the importance of WIL for lecturers, not only in exposing them to current practice and technologies in workplace, but also highlighting their technical needs and how these needs can be addressed through WIL. Taylor (2017, p. 44) argues that lecturers visiting industry is one of the best ways to improve the quality of their teaching and bring the classroom curriculum in closer alignment with the skills needs of industry. In agreement Van der Bijl and Taylor (2016, p. 106) states that a majority of lecturers, when surveyed, have indicated that their industry experience affected their classroom practice because they changed their teaching style away from purely focusing on curricula to one that included demands of the workplace.

Despite the success of the pilot, the ETDP SETA followed it up with a research study led by Professor Nothemba Nduma from the Cape Peninsula University of Technology (CPUT), one of the leading institutions in South Africa in terms of WIL's research, curriculum development and practice.

METHODS

For identifying the current WIL practice and lecturer development needs, the research was conducted in two phases. The first phase involved the collection of data using an on-line questionnaire, which was set up on Survey Monkey and distributed to more than 1,000 TVET lecturers in all the nine provinces of South Africa, of which 500 had participated in the ETDP SETA-SSACI partnership pilot. In preparation for the survey, principals at all 50 TVET Colleges in South Africa were contacted to obtain contact details of all TVET staff to ensure wide representation from all TVET colleges in the random sampling. The survey invitation was sent out in two batches targeting 547 and 1,345 lecturers respectively.

In the second phase, the responses to the questionnaire were followed with 18 focus group interviews (i.e., two focus group interviews in two colleges per province – one urban, and one rural). South African Universities of Technology (UoTs) that form the South African Technology Network (SATN) with all 9 UoTs participating, were requested to liaise with TVET colleges in their provinces and conduct focus group interviews to understand current WIL practice and WIL staff capacity development needs in the TVET sector of their provinces. The intention was also to encourage the UoT sector to communicate with the TVET sector and initiate discussions that could improve working relationships and result in partnerships for WIL enhancement and articulation of programmes. The collected data was analysed quantitatively and qualitatively and triangulated to find similarities and difference.

FINDINGS AND RECOMMENDATIONS

The research findings on current WIL practice by lecturers highlight the following:

1. A need to raise general awareness and capacity around WIL to clear the conceptual confusion; and how to implement it as well as lecturer capacity development needs that must be addressed through the development of WIL components for lecturer qualifications in the TVET sector.
2. There is no structured common programme for lecturers to access industry practice, while supervising their students on WIL; and
3. Lecturers prefer that their WIL practice be linked to a formal qualification.

Based on the findings above, the following are recommended by the study:

1. Closer working relationships with the workplace and employers should be encouraged to enhance educational institutions' understanding of what motivates industry to get involved in WIL and use these motivations to encourage WIL practice.
2. Further, it is important to understand and address challenges relating to workplace safety regulations and insurance.
3. The SACCI' Lecturer Workplace Experience (LWE) Programme was piloted in partnership with the ETDP SETA be adopted a best practice for exposing lecturers in the workplace.
4. Lecturer qualification should be developed and implemented compulsory WIL component.

CONCLUSION

In the context of the spread of the COVID-19 and the subsequent lockdowns, the exposure of the TVET College lecturers to industry through WIL slowly gaining traction in South Africa, albeit within strict adherence to health measures. This is partly due to the promulgation of the professional qualifications for TVET College lecturers in 2013, which requires a compulsory component of WIL for the initial training of lecturers. However, a formalised structured professional development programme, implemented with the full participation of employers, will go a long way in increasing the skills levels and have a positive impact in the teaching and learning of practicing lecturers.

The SSACI's 'Lecturer Workplace Experience' (LWE) programme has a potential, if well-funded and massively implemented in all the 50 South African TVET Colleges, to have such an impact because of its collaborative nature. The partnership with the ETDP SETA has demonstrated what can be achieved if all key stakeholders genuinely collaborate for a common goal.

REFERENCES

- Akoojee, S. (2008). FET college lecturers: the 'devolving' link in the South African skills development equation. *Journal of Vocational Education and Training*, 60(3), 297-313
- Cosser, M. (2010). The skills cline: higher education and the supply-demand complex in South Africa. *Higher Education*, 59(1), 43-53
- "ETDP SETA Annual Report" (2009). Retrieved from <http://www.etdpSeta.org.za>.
- "ETDP SETA Research Report" (2014). Retrieved from <http://www.etdpSeta.org.za>.
- "ETDP SETA Sector Skills Plan" (2009). Retrieved from <http://www.etdpSeta.org.za>
- Gamble, J. (2003). *Curriculum Responsiveness in FET Colleges*. Cape Town: HSRC Press
- Kraak, A., Lauder, H., Brown, P. & Ashton, D. (2006) *Debating high skills and joined up policy*. Cape Town: HSRC Press
- Maja, B. (2001). *Changes in the Further Education and Training Sector and their implications on Education and Training Practitioners*. Cape Town: HSRC Press
- Martin, A. and Hughes, H (2009). *How to make the most of work Integrated Learning: A guide for students, Lectures & Supervisors*. New Zealand: Massey University
- Smith, J. (2015, May 28). ETDP SETA/SSACI WIL for lecturers in public TVET Colleges: Formative Evaluation. Retrieved from <http://www.ssaci.org.za>
- Taylor, V. (2013). SSACI WIL for lecturers' programme. Retrieved from <http://www.ssaci.org.za>
- Taylor, V. (2017). Experiences of TVET College lecturers who participated in WIL. Findings from the SSACI-ETDP SETA WIL for Lecturers' Project. *TVET College Times*, pp 44-46
- Van der Bijl, A. & Taylor, V. (2016). Nature and dynamics of industry-based workplace learning for South African lecturers. *Journal of Industry and Higher Education*, 30(2), 98-108. Retrieved from http://www.ssaci.org.za/images/1._Article_by_VT_AvdB_Apr_2016.pdf
- Van der Bijl, A. & Taylor, V. (2018). Work-integrated learning for TVET lecturers: Articulating industry and college practices. *Journal of Vocational, Adult and Continuing Education and Training*, 1(1), 126-145. Retrieved from https://www.researchgate.net/publication/337105970_Work-integrated_learning_for_TVET_lecturers_Articulating_industry_and_college_practices/
- Wessels, M. (2005). *Experiential Learning*. Lansdowne: Juta

Impacts and challenges of introducing a cooperative education program in Japan

MIYAZATO SHINICHI

Kanazawa Institute of Technology, Nonoichi, Japan

INTRODUCTION

Internationally, cooperative education (co-op) students stop attending courses and are employed with salary at a company. Additionally, they engage in professional work according to a program organized by the university and the company, while, internship students work during long vacations without leaving school. In Japan, internships have been practiced for a long time however, co-op education has been rare. Japanese internship is provided by companies free of charge for a brief period to promote student recruitment. This provides company information opportunities to students, which are different from international co-op and internship education. As students obtain a job before graduation in Japan, they regard internships as a measure for deciding their future employers. Simultaneously, Japan has the smallest working-age population in the world owing to a declining birthrate and a rapidly aging population (OECD, 2022). To solve the labor shortage, companies want to welcome a large number of students as new employees and treat students as guests in the internship program. Consequently, the internship has little educational value for students.

University education systems differ between Japan and other countries. Consequently long-term internships are rarely practiced in Japanese engineering departments and co-op education is difficult to implement (Kameno, 2021, 4-15). For example, the summer vacation in Japan is for approximately 6 weeks, which is short compared to other nations. Therefore, it is generally difficult for 1st to 3rd-year students to work off campus for several months during the holidays. Conversely, 4th year students do not participate in classroom lessons and focus on graduation research in the laboratory for a year. Under these circumstances, for approximately 40 years, some universities in Japan have been offering internships for several months during the semester in 4th-year, as part of their curriculum. For example, though most Japanese university departments traditionally have required students to conduct one-year research for graduation in the senior year, 4th year students who go on to graduate are engaged in co-op education instead of graduation research at Nagaoka University of Technology. The benefits of this system for students are as follows (Hosaki et al., 2019, 105-111) (Iida, 2003, 18-21) (Tanaka, & Zegwaard, 2019) (Yamagiwa et al., 2020, 42-45): (1) they could recognize that receiving salaries as compensation for labor was difficult; (2) although Japanese university classes comprise individuals of the same generation, teams are composed of different generations in a company; (3) students recognize the value of “time is money”; and (4) prior to deciding where to work, they could experience the work environment of the company to evaluate whether this environment would be conducive to their career growth. With reference to these, Kanazawa Institute of Technology (KIT) has recently standardized a several-month co-op program for master's students and 4th year undergraduate students from 2020 as

KIT signed the Global Charter on Cooperative & Work-Integrated Education (CWIE) on August 5, 2019. An example syllabus can be found here: <https://europa.kanazawa-it.ac.jp/opsyllabus/kitos0210/2/1>.

This study introduces the cases of two 4th year students in the Department of Civil and Environmental Engineering receiving co-op education, and summarizes the impacts and challenges when making new promotions in Japan.

ACTIVITY OUTLINE

Table 1 presents the two cases. The graduation research of both students started in May as part of the joint research between the university and companies. The themes were the technology to be developed for construction companies and having academic interest in universities. In May, June, and July, corporate engineers visited the university several times to devise research plans along with the students and faculty members. Concurrently, the university consulted companies about co-op education and the companies agreed to cooperate. From August, students visited corporate laboratories daily and engaged in experiments as part of their co-op education. Under the guidance of a company engineer, the students proactively repeated the preparation and measurement of specimens for an experiment on concrete. From December to February, students took the measured data back to the university and compared them under the guidance of faculty members and engineers. They graduated in March and started working in April.

TABLE 1: Examples of co-op education activities

	Case 1	Case 2
Year	2019	2021
School year	4th year	4th year
Sex	Male	Female
Company	Hazama Ando Corporation	Oriental Shiraishi Corporation
Company Engineer	Senior Researcher, Doctorate Course Student	Senior Researcher, Graduate

Students' attitudes and abilities were evaluated using the sheet demonstrated in Table 2, based on precedent cases at universities in Japan and overseas. Specific evaluation items were set with reference to the university's own code of conduct (Table 3), the basic abilities of working adults (Miyazato, 2010) proposed by the Ministry of Economy, Trade, and Industry of Japan, and the International CDIO Initiative (<http://www.cdio.org/>) (Miyazato, & Doi, 2018).

Table 4 demonstrates the student self-assessment conducted immediately after the co-op project. The students evaluated their attitudes and abilities on four levels (4 = high, 3 = enough, 2 = little low, 1 = low, N = none). In Case 1, only the post evaluation was carried out; however, to visualize the growth of students through the co-op project, a pre-evaluation was also carried out in Case 2. According to this table, although there are strengths and weaknesses, it can be judged that the students had developed appropriate motivation and ability for all items, after the co-op education. In addition, the person in charge at the company provided feedback to the students as revealed in Table 5, based on Table 4. According to Table 5, the engineers of the company confirmed that the students were able to acquire

sufficient competency in the items demonstrated in Table 4 as a result of their earnestness and positive efforts.

TABLE 2: Student self-evaluation sheet

	Item	Related elements		
		University code of conduct	Basic abilities of working adults	CDIO Initiative
Basic core skill	Inquisitiveness and curiosity	✓		
	Awareness of self-development	✓		
	General education		✓	✓
Ability to perform work	Time management ability		✓	
	Ability to work systematically	✓	✓	
	Cost awareness			✓
	Practical thinking ability for work (professional sense)		✓	✓
Communication skills	Writing ability		✓	✓
	Oral presentation ability		✓	✓
	Communication skills with seniors		✓	✓
Awareness of health and safety / rules	Awareness of etiquette	✓	✓	
	Cooperativeness	✓	✓	
	Awareness of compliance	✓	✓	
	Awareness of occupational safety and health		✓	
Expertise	Ability to work scientifically		✓	✓
	Ability to use knowledge and skills to solve problems		✓	✓

TABLE 3: KIT's Code of Conduct

Kindness of Heart, Intellectual Curiosity, Team Spirit, Integrity, Diligence, Energy, Autonomy, Leadership, Self-Realization
--

TABLE 4: Self-evaluation sheet after co-op project

Item		Student Self-evaluation		
		Case 1	Case 2	
		After	Before	After
Basic core skill	Inquisitiveness and curiosity	3	2	3
	Awareness of self-development	3	2	3
	General education	3	2	3
Ability to perform work	Time management ability	3	2	3
	Ability to work systematically	4	1	3
	Cost awareness	N	2	3
	Practical thinking ability for work (professional sense)	3	2	3
Communication skills	Writing ability	3	2	3
	Oral presentation ability	N	2	3
	Communication skills with seniors	3	2	3
Awareness of health and safety / rules	Awareness of etiquette	3	3	3
	Cooperativeness	4	2	3
	Awareness of compliance	3	3	3
	Awareness of occupational safety and health	3	3	3
Expertise	Ability to work scientifically	3	2	3
	Ability to use knowledge and skills to solve problems	3	2	3

TABLE 5: Comments from corporate engineers to students after co-op program

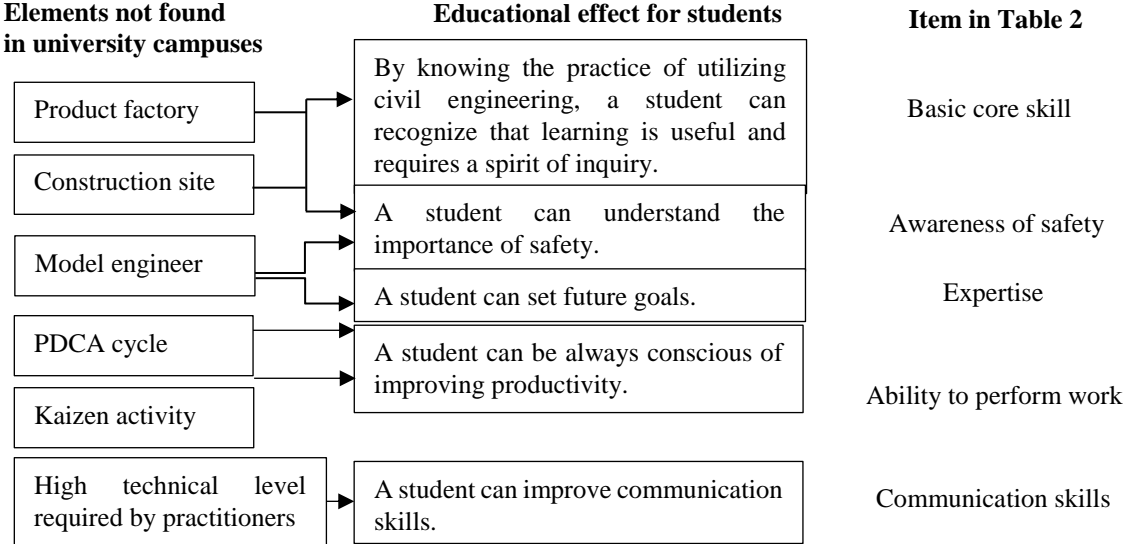
Case 1	The attitude of being proactively involved in the experiment, especially the attitude of seriously dealing with unexpected results and conducting the experiment, was good. In addition, the speed and accuracy of the students' procedures were perfect and the relationship established with the partner companies was satisfactory.
Case 2	It was good to be able to propose and act on improvement measures, not only to carry out the given work but also to improve the content. Similarly, she was also highly praised for her attitude of always looking beyond the work content and moving forward while improving work efficiency. Furthermore, she demonstrated a good attitude of trying to improve when areas of concern were indicated.

SUMMARY OF FINDINGS

Based on Tables 4 and 5, Figure 1 suggests that there seems to be considerable evidence of the positive effect of co-op in the case of two students. According to the student comments, it was confirmed that the training deepened their interest in the construction industry and research themes and increased their motivation. These were noticed through the production of parts at the factory and the tour of the construction site, which could not be learned on the university campus. In addition, the students were always aware of the PDCA (Plan – Do – Check - Action) cycle and Kaizen activities in the company, became accustomed to thinking about reasons and connections, had more time to reflect on their own thoughts, and believed that they were making steady progress. This was because of the presence of a civil engineer, who served as a model for students and was able to help them set goals. In particular, according to the self-evaluation by Student B in Table 4, the ability to work systematically, which was 1

point before co-op, improved to 3. In addition, participation in the in-house technical study group allowed students to experience advanced presentations at a practical level. Several practitioners commented that their research presentations had improved as did their ability to communicate. Including these findings, the merits mentioned in previous reports were also confirmed for new promotions in Japan.

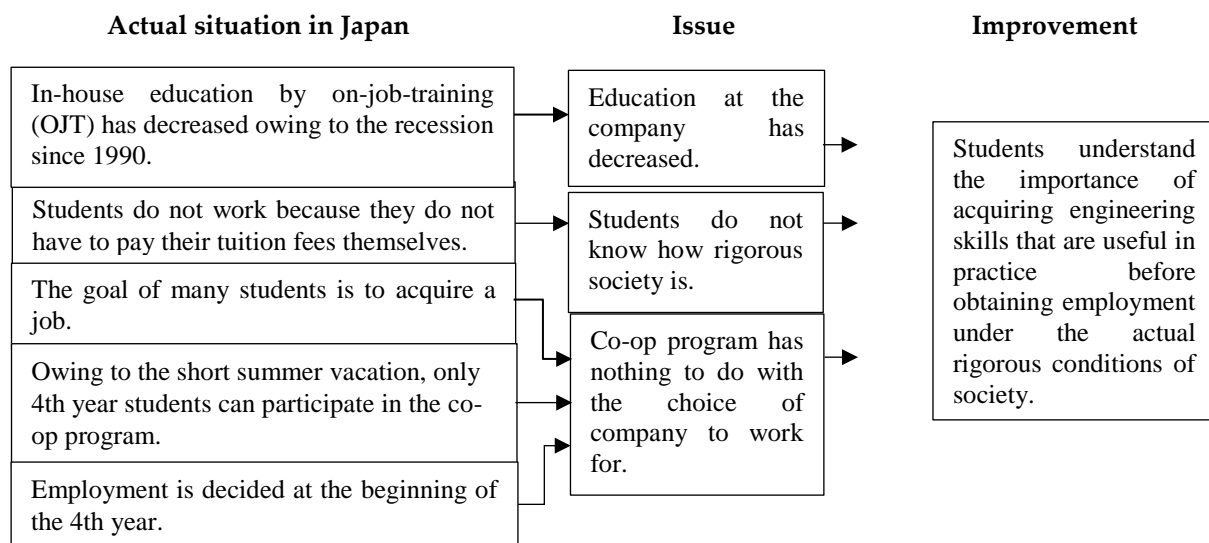
FIGURE 1: Relationship of educational effect on students



CHALLENGES OF INTRODUCING CO-OP PROGRAM

Figure 2 summarizes the issues associated with promoting co-op education in Japan. The recession in society and the excessive emphasis on job offers at universities have created several issues. In particular, Japanese parents pay tuition fees, therefore, it is extremely rare for students to look for opportunities to earn while studying. Moreover, even though students had no job searching experience, they started job searching one year before graduation. Therefore, they never worked in unfavorable circumstances, and misunderstood that they could get their favorite work. Thus, to play an active role as an engineer, there is not enough awareness that it is necessary to get a job at a company that utilizes one's abilities both technically and culturally. Under these circumstances, students must be motivated to participate in industry-academia collaborative programs that are separate from job searching. The two students introduced in this study participated in the industry-academia joint research project and achieved satisfactory results. In future, additional examples will need to be summarized and their benefits demonstrated to students.

FIGURE 2: Challenges of introducing co-op program to faculty of engineering in Japan



CONCLUSION

The results of organizing the cases in which two students participated in the newly launched co-op project are as follows:

1. After several months of co-op activities, students became aware of the engineering abilities that could not be learned on the university campus and were beneficial to their growth in many ways.
2. The impact on the student from their self-reflection on the skills gained as a result of their co-op experience, and confirmed by their industry supervisor, is promising and further investigation is needed.
3. Japanese students commit to work for a company around one year before graduation. Therefore, because the co-op program in Japan is not an activity that is tailored for career paths, the motivation for students to participate in co-op education should be set for another purpose. However, this scenario has not yet been established and is an important topic for future research. That is, challenges remain in introducing co-op education into the Japanese context that requires further exploration to motivate students.

This study describes only two student cases in Japan. It is better to promote the analysis based on more samples. Finally, as the globalization of co-op education progresses as indicated in the WACE charter, this study will be useful for considering the situation in Japan.

REFERENCES

- CDIO (n.d.) Retrieved February 7, 2022, From <http://www.cdio.org/>.
- Hosaki, Y., Ogino, A., Tamada, H., Minakuchi, M., & Yoshimura, M. (2019). Report on Practice and Assessment of a Cooperative Education Program in the Field of Science and Engineering from the Coordinator Perspective, *Forum of Higher Education Research*, 9, 105-111.
- Iida, S. (2003). Role and Function of Internship in the Education System of Nagaoka University of Technology -Present and Future-, *Journal of Japanese Society for Engineering Education*, 51, 3, 18-21.
- Kameno, J. (2021). Historical Background, Recent Changes and Issues of Internships for University Students in Japan, *Japanese Journal of Labour Studies*, 63, 8, 4-15.
- Miyazato, S., & Doi, T. (2018). Elements of CDIO in graduation research project under university-industry collaboration, Proceedings of the 14th international CDIO conference.
- Miyazato, S. (2010). Education by University-Industry Coordination with Joint Research Project, Proceedings of International Conference on Engineering Education.
- OECD (2022), Working age population (indicator). doi: 10.1787/d339918b-en.
- Tanaka, Y., & Zegwaard, K. (Eds.) (2019). *Cooperative and Work-Integrated Education in Asia*, New York: Routledge.
- Yamagiwa, K., Ueda, Y., Yamauchi, T., & Suzuki, T. (2020). Collaboration of Two "Dormitory-Type Education" Programs, *JSEE Annual Conference International Session Proceedings*, 42-45.

The value of simulations in learning workplace skills

JAMES STELLAR

University of Albany, New York

NICOLE MCLEAN

InStage Co, Toronto, Canada

ADRIENNE DOOLEY

Play OnWords Therapeutic Services, St Thomas, US Virgin Islands

In 1929 Edwin Link invented the Link Trainer, a pneumatic flight simulator that could mimic the pitch, roll, and yaw of actual powered small plane flight. It provided pilots with practice at maneuvers which could be life-threatening if encountered for the first time in the real world (New World Encyclopedia Contributors, 2021). Prior to that from 1919-1926 the US post office saw 35 pilots killed flying mail, one for every 115,325 miles (“They Died Flying the Mail”, 2022). The flight simulator ended much of that by giving pilots a safe place to practice lifesaving flying skills. Today, sophisticated virtual reality flight simulators play a major role in training airline pilots, in addition to time flying under supervision.

In the 1960s Peter Safer touted the medical efficacy of mouth-to-mouth resuscitation and that gave rise to a mannequin simulation, complete with a chest spring on which one could safely practice cardiopulmonary resuscitation skills (“History of Medical Simulation”, 2022). Today computerized versions provide medical staff with CPR training, although additional medical practice supervision is again required. Sophisticated virtual reality simulations of the body dissection are now making inroads into basic medical training (Herur-Rama et al., 2021).

For over 100 years, starting at the University of Cincinnati in engineering, cooperative education (Coop) programs have provided students with an opportunity to learn not only from periods of full-time study but also from alternating periods of paid full-time work (Niehaus, 2005). Around the world, such programs are also called Work-Integrated Learning (WIL) (McRae & Johnston, 2016). In other forms they are known as internships, apprenticeships, or even just experiential education. What they all have in common is the building of work-place skills to accompany the abstract knowledge of the field gained from academic study. The practical goal is the same - to help with the eventual transition to employment. The question here is whether simulations can work to build some of these workplace skills in students that would otherwise come from direct experience.

To address the above issue here, we consider as examples two very distinct simulation operations. The first is a Toronto-based company, InStage, that provides virtual simulation for a job interview using either virtual-reality or screen-based interaction with avatars in a presentation scenario like a structured job interview (“InStage Practice”, 2022). The experience is accompanied by a computer analysis of speech patterns such as the use of filler-words. The interview can be viewed by a live coach or simply done alone for practice. The second is based on the use of actors as part of a speech pathology training program at Massachusetts General Hospital Institute of Health Professions (Stellar et al., 2021). That approach use live actors in the real world or on screen to simulate patient interactions that will be seen

in the clinic. Finally, we will briefly discuss why these simulations must be authentic to have an impact as viewed by neuroscience-based thinking about explicit (cognitive) and implicit (emotional) information processing.

AUTHENTIC VIRTUAL SIMULATION OF A JOB INTERVIEW

Every student needs to develop communication skills to effectively prepare for the workforce. It does not matter whether they are introducing themselves to a potential employer or interviewing for their dream job. The biggest skills gap that employers are seeking remains the same, soft skills, and verbal communication skills at large.

In 2016 Forbes cited a PayScale study where 63,924 were surveyed and highlighted that 46% of managers felt new graduates lack communication skills and that 39% felt they lacked public speaking skills specifically (Strauss, 2016).

In 2017, InStage, a virtual reality company out of Toronto, Canada, set out to change the way students develop these skills by combining simulation technology and artificial intelligence to create a safe and easily accessible environment for students to develop their communication skills. Since then, InStage has created hundreds of immersive job readiness simulations that students can use to practice interviews, elevator pitches, presentations, and more with a diverse cast of characters that makes it feel like they're talking to real people. Afterwards students immediately receive personalized feedback reports they can use to make improvements and track their progress.

Internal student surveys report the following data ("InStage Practice", 2022):

- Students reported that the simulations were "believable". 7.78/10 n=440 – (Scale of 1-10 scale (not believable at all (1) - fully believable (10)).
- 74% of participants (n=156) reported an increase in confidence after a single practice session.
- 86% of participants (n=440) reported that online virtual simulations were "about the same" or "more effective" than in-person instruction. This is a promising outcome given the efficiency advantage of simulation-driven training vs human-driven training.
- 92% of students (n=440) report that simulation-based learning is enjoyable, increasing the likelihood that they will continue practicing.

For this simulation work, InStage has won the World's Best Education, Training, and Simulations at Amazon's Global AR/VR Challenge; and the Canadian representative at the 2021 World Ed-Tech forum London, England.

In summary, InStage technology fills several critical needs to help students meet employer expectations. By providing job readiness simulations that enable high repetition practice, students can make mistakes, build confidence, track their progress, and prepare for the real-world job interviews.

AUTHENTIC SIMULATION OF PATIENT INTERACTION IN SPEECH PATHOLOGY TRAINING

Many universities, hospitals, and institutes train speech pathologists, and a variety of health professionals, to eventually become practitioners. Consistent with the clinical hours that medical professionals must obtain to become licensed is their training in Speech Pathology practice. Simulations are not new to this field. They were explored and studied in Australia, are available online in America, where they have also been studied (Ellis, 2017; “Integrating Simulation Education”, 2020; Miles et al., 2015; “Simulation-based Learning Program”, 2022). They are part of the American Speech-Language-Hearing Association (ASHA) accreditation recommendations for up to 75 hours and are currently under study at Massachusetts General Hospital Institute of Health Professions (MGHIHP) (MGH Institute of Health Professions, 2021).

While modern versions of medical simulators (e.g. SimMan) exist that go beyond CPR to procedures like endoscopy, what interests us here is the use of actors to simulate complex and authentic patient interactions in a speech pathology setting (“Simman 3G Plus”, 2022). This work complements graduate clinical placement giving students a chance to experience a variety of circumstances likely to be encountered in practice. For example, one experience might emulate a parent interfering too much while accompanying a child in the speech therapy pathology session. At MGHIHP actors employed can be speech pathologists themselves who are deeply knowledgeable of the syndromes and the patient populations (Stellar et al., 2021). The institutional experience is that such simulations produce more advanced clinicians, resulting in an easier time getting an internship and ultimately a placement on graduation. Certainly, this program was very useful during the pandemic when patient-student interaction was limited. But now it has taken on a life of its own as a way of boosting preparedness for clinical placement. The interest in this area is also shown by the existence nearby of the Center for Medical Simulation that is part of Harvard University and associated with MGHIHP (“Center for Medical Simulation”, 2022; Rossi, 2022).

Under the influence of ever-developing technology, immersive medical simulation appears to be taking off even in surgery and may become as common a form of training as in modern flight training as mentioned above (Badash et al., 2016). What is unique about the use of actors in speech pathology is that they can simulate complex social situations that would otherwise require avatars. But that is not far from coming as they already exist in the InStage practice job interviews previously mentioned.

AUTHENTIC SIMULATION EXPERIENCES ENGAGE IMPLICIT BRAIN PROCESSING

Simulations are everywhere, from teacher training to radiology (Cohen et al., 2020; O’Connor et al., 2020). Simulations work, we suggest, because they engage the implicit processes of emotional decision-making as well as the explicit processes of cognitive decision-making that are seen in classical classroom-based education. The existence in general of two such processes is not new but was famously laid out in the 2011 book *Thinking Fast and Slow* by Daniel Kahneman and as is supported by research in the field of behavioral economics. To get this engagement, simulations must have a high degree of authenticity, should present verbal and non-verbal stimuli, and must be immersive. Both of our examples share these features. As noted, they also share features with the actual workplace experiences that are produced by Coop, WIL, internships, or other experiential education activities in college.

These two processes are also natural to the basic functioning of the brain. Briefly, the highest part of the brain anatomically and evolutionarily is the neocortex. It is where our explicit cognition occurs with abstract models of the world, language, etc. For example, the neocortex even gives us the basic trajectory of a rolling ball that we can maintain when it goes out of sight behind a screen (Bertenthal et al., 2007). Even young children jump their eyes to the other side of the screen and wait for the ball to appear (“Eye tracking”, 2022). This is not just eye-tracking. They have a much more powerful abstract concept of the ball’s trajectory. Lower levels of the brain appear to store skill learning (like placing the feet in walking) or provide emotional reactions to stimuli or experiences that can be used to compute their value (Clark, 2015; “The Concept of the “Triune Brain””, 2022). Here in these implicit processes, we would say is where the authenticity of the simulation comes in to play to evoke the emotional reaction, help develop soft-skills, and create immersion that grabs the student.

Experiential learning has long combined the explicit and implicit learning processes as seen as operating in Kolb’s call for reflection to be a part of experiential learning to surface the implicit in the learning process (Kolb, 2014). Very long ago, it is what Blaise Pascale meant when he said, “The heart has its reasons of which reason does not know” (Pascal, 1995). We think higher education today is increasingly figuring out the power of this combination of explicit learning from the classroom and implicit learning from experience (“Center for Neuroscience and Experiential Education”, 2022). These institutions are seeing college graduates who are confident and mature in their field as well as knowledgeable and learned in their discipline. We believe that these are the types of students who more likely succeed after graduation whether in employment or in securing further professional education.

Authentic, compelling simulations can play a large role in this outcome (Buford et al., 2022). They can complement Coop or other WIL programs. They can reduce the expense of implementing experiential programs for institutions which wish to enter this area of operation. They are modern and impactful for the institution and the student. Going forward, we believe simulations will be important to all colleges and universities, well utilized by students, and make a difference in their success.

REFERENCES

- Badash, I., Burt, K., Solorzano, C. A., & Carey, J. N. (2016). Innovations in surgery simulation: A review of past, current and future techniques. *Annals of Translational Medicine*, 4(23), 1–10. <https://doi.org/10.21037/atm.2016.12.24>
- MGH Institute of Health Professions. (2021, September 27). *Virtual reality technology could be a wave of the future at MGH Institute*. Retrieved August 9, 2022, from <https://www.mghihp.edu/virtual-reality-technology-could-be-wave-future-mgh-institute>
- Bertenthal, B. I., Longo, M. R., & Kenny, S. (2007). Phenomenal permanence and the development of predictive tracking in infancy. *Child Development*, 78(1), 350–363. <https://doi.org/10.1111/j.1467-8624.2007.01002.x>
- Buford, M. V., Sharp, M. J., & Stebleton, M. J. (2022). Taylor and Francis.
- Center for medical simulation. (2022). Center for Medical Simulation. <https://harvardmedsim.org/>
- Center for Neuroscience and Experiential Education. (2022). Neuroexed. <https://www.neuroexed.com/>
- Certification standards for speech-language pathology frequently asked questions: Clinical simulation. (2022). ASHA. <https://www.asha.org/certification/certification-standards-for-slp-clinical-simulation/>
- Clark, D. J. (2015). Automaticity of walking: Functional significance, mechanisms, measurement and rehabilitation strategies. *Frontiers in Human Neuroscience*, 9, 1–13. <https://doi.org/10.3389/fnhum.2015.00246>
- Cohen, J., Wong, V., Krishnamachari, A., & Berlin, R. (2020). Teacher coaching in a simulated environment. *Educational Evaluation and Policy Analysis*, 42(2), 208–231. <https://doi.org/10.3102/0162373720906217>
- Ellis, C. M. (2017). Using simulation and critical thinking in speech-language pathology: A university case study. *Journal of Human Services: Training, Research and Practice* 2(2).

Supporting student well-being through remote work-integrated learning: Perspectives from program coordinators

ANIKA TAYLOR

AALAYA MILNE

ALEXIA TAM

ASHLEY STIRLING

University of Toronto, Toronto, Canada

Work-integrated learning (WIL) is being increasingly offered in higher education to enrich students' studies through opportunities to apply knowledge in authentic workplace contexts (Jackson, 2015). WIL programs have been known to help bridge the gap between job market demands and students' capacity, by providing opportunities to enhance their employability skills and practice the application of their academic skills in a work environment (Orrell, 2004). The benefits of participating in WIL have centered around meaningful connection to a community of practice, which often involves workplace integration, mentorship and formal and informal networking opportunities that occur in the workplace setting (Jackson, 2013, 2015). Importantly, these factors are theorized to reduce stress, increase the ease of transition to the workplace and support sustainable future participation in the workplace, all of which may translate to improved student mental health and well-being (McBeath et al., 2017).

Well-being encompasses physical, psychological, environmental, social and cognitive domains, and is characterized by life satisfaction, social engagement, physical wellness, the presence of positive emotions and the absence of negative emotions (Cloninger & Zohar, 2011; Gillett-Swan & Grant-Smith, 2018). In the context of WIL and higher education broadly, fostering well-being has become an important priority, given that students are expected to dedicate extensive time, physical and mental resources to achieving success (Okanagan Charter, 2015, as cited in Stanton et al., 2016). However, amidst disruptions to the holistic learning environment caused by the COVID-19 pandemic, necessitating the shift to remote, online WIL, it is imperative to revisit students' well-being and how it is being supported in this context.

Remote course-based and work-integrated learning puts physical distance between students and their support networks and social groups, which may disrupt their sense of social connectedness, sense of belonging and well-being (McBeath et al., 2017; Stanton et al., 2016). Research also has suggested that WIL opportunities concurrent with academic study periods may heavily tax student's already scarce resources, increasing their vulnerability to negative affect, sadness, stress and mental health disorders, which may reciprocally affect their capacity to be fully invested in their academic learning, and successfully integrate and master their skills in a WIL environment (American College Health Association, 2016; Gillett-Swan & Grant-Smith, 2018; Orrell, 2004). Moreover, these challenges may be

exacerbated by the pandemic and justify increased recognition and support to hone and advance best practice in this area.

Despite the wealth of existing research on pedagogically sound online course delivery (van Rooij & Zirkle, 2016) and implications for student well-being and mental health within this context (Lischer et al., 2021; Zainal Badri et al., 2021), similar inquiry grounded in remote WIL has been scarce (Goold & Augar, 2009; Male et al., 2017; Vriens et al., 2010;). While scholarly work on remote WIL design (Dean & Campbell, 2020; Zegwaard et al., 2020) and stakeholder experiences in this context, particularly that of students, are emerging within (Bowen, 2020; Pretti et al., 2020) and beyond Canadian contexts (Lomas et al., 2022), existing research lacks insight on the perspectives of the broader team of stakeholders responsible for developing and embedding intentional measures to support student's well-being. Moreover, despite previous assertions that academics or program coordinators have a salient role in supporting the facilitation of remote WIL (Winchester-Seeto et al., 2016), exploration of their perspectives on supporting student well-being is missing from this area of research. As such, the present study explored program coordinators' experiences of supporting student well-being in remote WIL as necessitated by the pandemic.

METHODS

A qualitative research design was employed to explore the research question (Denzin & Lincoln, 2011). A constructivist paradigmatic position was adopted, promoting collaboration in meaning making between researchers and participants throughout the interview process (Guba & Lincoln, 1994).

Theoretical Grounding

Given the focus on understanding how student well-being is supported through remote WIL, data collection and analysis for the present study was grounded in the 'Five Ways to Wellbeing' (i.e., connect, be active, take notice, keep learning, give) framework by Aked and colleagues (2008). This framework promotes an awareness of behaviours related to enhancing well-being and encourages prioritizing and promoting them in daily life.

Participants

Purposeful (i.e., recruitment emails and social media posts) and snowball sampling were used to recruit personnel working in Canadian post-secondary WIL. Study participants included 17 WIL 'program coordinators' from a mixture of Canadian colleges and Universities that supported remote student WIL, currently or within the last two years. Participants identified as male (n=5) and as female (n=12). One participant identified as a member of the LGBTQI2+ community and one identified as being BIPOC (i.e., Black). No participants self-identified as being Indigenous. All participants supported one or more different types of WIL identified by CEWIL, with the most highly represented being internships (n=10), co-operative education (n=10) and work experience (n=5). No participants coordinated entrepreneurship opportunities.

Data Collection

Following institutional research ethics board (REB) approval (#40238), online semi-structured interviews were conducted to explore program coordinators' experiences of supporting student well-being in remote WIL programs. Interviews ranged in length from 30 – 60 minutes. Researchers ensured all measures were taken to secure the privacy of participants in the virtual environment. A copy of the letter of information and informed consent was read, virtually signed and returned by the participant before each interview began. Participants were also asked to complete a short demographic questionnaire to collect descriptive information (i.e., gender, race, type of WIL coordinated). Interviews were transcribed verbatim and any identifiable information was removed during this process. Pseudonyms were used to further protect participant anonymity. Each interview began with the general question of "How do you see your role in supporting student well-being?"

Data Analysis

Interview data was thematically analyzed by immersing and familiarizing oneself with the data, using a combined inductive and deductive approach to generate initial codes and themes, reviewing themes, and defining and naming themes (Braun & Clarke, 2006). Thematic maps were also used to aid in sorting the data. Steps taken to ensure trustworthiness of the data included member reflections, maintaining an audit trail of the research design and any amendments made, and investigator triangulation.

RESULTS

Two main themes were generated from the analysis of interview transcripts; program coordinators' perspectives on their role in supporting student well-being and well-being supports offered to students engaged in WIL. Findings from both themes are outlined below.

Program Coordinators' Perspectives on their Role in Supporting Student Well-being

All program coordinators recognized that they had a role to play in supporting students' well-being. When prompted at the beginning of the interview to reflect on this and describe their role, participants highlighted the main responsibilities they had, including being available to provide emotional support, recognizing struggling students and intervening where necessary. Considering the latter, one perspective shared was as follows:

Part of the role is also recognizing the signs for students that are not just stressed about an exam or not just stressed about saying the right thing in a cover letter but are really questioning themselves and their situation. It's about looking for the early alerts - we already sent three students to counseling this week – and trying to recognize the two different things.

Providing further outlook on supporting students' well-being, another participant explained their role as follows:

Within my role I support students a lot even outside of the placement portion of their program... They will come and be seeking support on how to manage stressful situations and challenging situations with supervisors, with peers in class or with faculty.

Well-being Supports Offered to Students Engaged in Work-Integrated Learning

Aligned with the theoretical grounding of this project in the 'Five Ways to Wellbeing' framework (Aked et al., 2008), program coordinators were asked to describe the supports they provide to support student well-being across all five ways. While examples were reported for each of the five ways, participants shared the most examples of how they were supporting students within the categories of 'connect' and 'keep learning'. As such, examples from the latter are described below.

Connect

'Connect', the first way to well-being, refers to the importance of creating strong social connections with others achieved through meaningful interactions (Aked et al., 2008). Participants recognized the importance of building social connections as a part of the WIL experience and shared their insight on promoting and meaningfully facilitating it in the virtual environment. Speaking to this, a participant explained:

I proceeded to help students build a co-op education hub that started with the Faculty, and then very quickly spread across the University. Now I think of WIL [workplace organization] and will try to bring them in as a partner to build a peer education program. This is an example of how I embed my practice of supporting students' mental health and not just the individual, but by building communities of student learning and connectedness to help the students cope with anxieties and other mental health challenges.

Considering connection within the remote workplace, another participant described how they support and encourage students in developing stronger working relationships and connections by recommending workplace specific strategies, including to reach out to managers and colleagues by phone or by teams or zoom, as opposed to only communicating by email, as well as coaching students to establish regular communication touch points.

Keep learning

'Keep learning', the fourth way to well-being, emphasizes ongoing learning, while identifying its benefits, such as reducing feelings of isolation, and developing social relationships (Aked et al., 2008). Within this theme, program coordinators discussed how continued learning was aided by embedding opportunities to encourage students to explore their areas of interest and promoting engagement with communities of practice. Sharing an example of an institutional practice to promote well-being through continued learning, one participant explained:

Students work with the (field placement) organization and develop a learning contract, and part of that would be additional training that the student wanted to get in particular area. So a student might get connected with some workshops or some online training or something like that.

Beyond supporting students' individual learning plans, some practice coordinators also actively promoted complementary training opportunities.

We had firms and suppliers and organizations hosting wonderful online seminars that the students were welcome to attend ... I posted all kinds of these types of seminars and encouraged

them to join these organizations and to try to stay aligned with the industry that way, just to keep the pulse on what was happening.

CONCLUSION

The present qualitative study offers valuable and novel insight into program coordinators perceived role in supporting student well-being and their experiences facilitating connection and continued learning for students in remote WIL environments. Given that aspects of connection and continued learning are naturally embedded in non-remote WIL, it is not surprising that there was a focus on translating supports of this nature into the virtual and remote environment. Moreover, when designing student support systems for remote WIL, program coordinators and other relevant stakeholders are encouraged to consider other aspects of students' experience which may be disrupted or challenged by COVID-19 and amidst the shift to a remote environment. Considering the Five Ways to Wellbeing framework, this would include students' level of physical activity, capacity to give back to peers and the community and take notice of and appreciate what matters to them.

The authors recommend that program coordinators be mindful of the important role they hold in directly and indirectly supporting students' well-being. Program coordinators and researchers are encouraged to evaluate existing supports for students against the Five Ways to Wellbeing framework to inform the direction and development of future support measures, with students' unique and evolving mental health needs at the center of such innovation. Future inquiry should evaluate the salience and efficacy of different strategies for supporting student's mental health and wellbeing while working and learning in a remote context. In conclusion, it is recommended that program coordinators and other relevant stakeholders, including employers, mentors, and course instructors, leverage their expertise and collaborate to ensure students are positioned to glean improvements in their well-being through participation in remote WIL.

REFERENCES

- Aked, J., Marks, N., Cordon, C., & Thompson, S. (2008). Five ways to well-being: The evidence. London: New Economics Foundation.
- American College Health Association. (2016). American College Health Association–National College Health Assessment II: Canadian reference group executive summary spring 2016.
- Bowen, T. (2020). Work-Integrated Learning Placements and Remote Working: Experiential Learning Online. *International Journal of Work-Integrated Learning*, 21(4), 377-386.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Cloninger, C. R., & Zohar, A. H. (2011). Personality and the perception of health and happiness. *Journal of affective disorders*, 128(1-2), 24-32. <https://doi.org/10.1016/j.jad.2010.06.012>
- Dean, B. A., & Campbell, M. (2020). Reshaping work-integrated learning in a post-COVID-19 world of work. *International Journal of Work-Integrated Learning*, 21(4), 355-364.
- Denzin, N. K., & Lincoln, Y. S. (Eds.). (2011). *The Sage handbook of qualitative research*. sage.
- Gillett-Swan, J., & Grant-Smith, D. (2018). A Framework for Managing the Impacts of Work-Integrated Learning on Student Quality of Life. *International Journal of Work-Integrated Learning*, 19(2), 129-140.
- Goold, A., & Augar, N. (2009). Using virtual meeting spaces for work integrated learning. *Proceedings Ascilite Auckland*, 367-371.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. *Handbook of qualitative research*, 2(163-194), 105.
- Okanagan Charter: An international charter for health promoting universities & colleges. (2016, January 15). International Conference on Health Promoting Universities & Colleges. <http://dx.doi.org/10.14288/1.0132754>

- Jackson, D. (2015). Employability skill development in work-integrated learning: Barriers and best practice, *Studies in Higher Education*, 40(2), 350-367. <https://doi.org/10.1080/03075079.2013.842221>
- Jackson, D. (2013). The contribution of work-integrated learning to undergraduate employability skill outcomes, *Asia-Pacific Journal of Cooperative Education*, 14(2), 99-115.
- Lischer, S., Safi, N., & Dickson, C. (2021). Remote learning and students' mental health during the COVID-19 pandemic: A mixed-method enquiry. *Prospects*, 1-11. <https://doi.org/10.1007/s11125-020-09530-w>
- Lomas, G., Gerstenberg, L., Kennedy, E., Fletcher, K., Ivory, N., Whitaker, L., Russ, E., Fitzroy, R., & Short, M. (2022). Experiences of social work students undertaking a remote research-based placement during a global pandemic. *Social Work Education*, 1-18. <https://doi.org/10.1080/02615479.2022.2054980>
- Male, S. A., Hargreaves, D., & Pointing, D. (2017). The emerging suite of virtual work integrated learning modules for engineering students. In 28th Annual Conference of the Australasian Association for Engineering Education (AAEE 2017) (p. 399-406).
- McBeath, M. L., Drysdale, M. T., & Bohn, N. (2017). Pathways to mental health and wellbeing: Understanding and supporting students during critical school-to-work transitions. In *Work-integrated learning in the 21st century*. Emerald Publishing Limited, pp. 177-191. <https://doi.org/10.1108/S1479-367920170000032012>
- Orrell, J. (2004, July). Work-integrated learning programmes: Management and educational quality. In Proceedings of the Australian Universities Quality Forum (pp. 1-5). Victoria: Victoria University.
- Pretti, T. J., Etmanski, B., & Durston, A. (2020). Remote Work-Integrated Learning Experiences: Student Perceptions. *International Journal of Work-Integrated Learning*, 21(4), 401-414.
- Stanton, A., Zandvliet, D., Dhaliwal, R., & Black, T. (2016). Understanding Students' Experiences of Well-Being in Learning Environments. *Higher Education Studies*, 6(3), 90-99.
- van Rooij, S. W., & Zirkle, K. (2016). Balancing pedagogy, student readiness and accessibility: A case study in collaborative online course development. *The Internet and Higher Education*, 28, 1-7. <https://doi.org/10.1016/j.iheduc.2015.08.001>
- Vriens, M., Op de Beeck, I., De Gruyter, J., & Van Petegem, W. (2010). Virtual placements: Improving the international work experience of students. In EDULEARN 2010. 2nd International Conference on Education and New Learning Technologies (pp. 1175-1183). International Association of Technology, Education and Development (IATED); Spain.
- Winchester-Seeto, T., Rowe, A., & Mackaway, J. (2016). Sharing the load: Understanding the roles of academics and host supervisors in work-integrated learning. *Asia-Pacific Journal of Cooperative Education*, 17(2), 101-118.
- Zainal Badri, S. K., Wan Mohd Yunus, W. M. A., Ramos, H. M., & Mahmud, N. (2021). Remote learning and its implications toward study-life conflicts and the mental health of university students: does studying at home or campus matter?. *Higher Education Research & Development*, 1-15. <https://doi.org/10.1080/07294360.2021.2014407>
- Zegwaard, K. E., Pretti, T. J., & Rowe, A. D. (2020). Responding to an international crisis: The adaptability of the practice of work-integrated learning. *International Journal of Work-Integrated Learning*, 21(4), 317-330.

The best of both: Harnessing the potential of repurposing data sets in work-integrated learning research

THERESA WINCHESTER-SEETO

University of New South Wales, Sydney, Australia

PATRICIA LUCAS

Auckland University of Technology, Auckland, New Zealand

ANNA ROWE

University of New South Wales, Sydney, Australia

INTRODUCTION

Quality research is essential to ensuring quality teaching in Work-Integrated Learning (WIL), and underpinning quality research is robust data gathering and handling. As qualitative data can be expensive and time-consuming to collect, it is useful to consider how we might harness the potential of existing data sets, in the same way that meta-analysis does for quantitative data. This paper will explore the potential for re-purposing data sets, drawing on two data sets collected as part of different research projects in WIL.

Specifically, our research seeks to understand student emotions in WIL. It uses two existing data sets that were collected under very different conditions and for different purposes. The first data set features the emotions experienced by WIL students in New Zealand, gleaned from reflective journals. Sport students were asked to write a weekly reflective journal during their time on placement. From the group of 92 third year students 38 gave permission for their reflective journals to be accessed for research purposes. This was one of the data collection methods used in a larger research project exploring critical reflection in cooperative education (Lucas, 2015). The second data set is based on a series of interviews with academic and workplace supervisors in Australia ($n=28$), New Zealand ($n=5$) and Canada ($n=2$) and taps into staff perceptions. This was an exploratory study on debriefing in WIL, part of which sought to investigate if and how supervisors used debriefing to assist students process emotions, as well as gauging the types of emotions students were experiencing and the triggers for those emotions. The supervisors were involved in the delivery of WIL programs across a diverse range of disciplines and professions (Winchester-Seeto & Rowe, 2019).

The research we are undertaking raises methodological challenges, dilemmas and questions that will be explored in this paper:

- What are the benefits and risks when repurposing data collected for completely different studies?
- What are the benefits and limitations of using a multi-method approach, e.g. incorporating different kinds of qualitative data, such as student reflections and staff interviews?

- What are the advantages and disadvantages of analysing a single combined data set, versus that of interrogating data sets independently?
- Are both approaches valid?

Many of the observations and questions raised below reflect the dilemmas perceived by the three authors, based on their own experiences from many years of publishing in WIL.

REPURPOSING AND REUSING DATA

Repurposing of research data can be described as the utilisation of a dataset for a purpose that was not the original intention of the research when it was undertaken (Fox, 2004; McKay, 2014). The practice of repurposing is common to many science and management based areas where large datasets are collected and stored, including biomedicine (Piwowar & Chapman, 2008), healthcare (Bonde et al., 2019), biology (Baker, 2012), science (Palmer et al., 2011) and business management (Castellanos et al., 2017). Collection of all forms of data is expensive requiring funding, either private or public, therefore maximum utilisation of data for the public good is desirable (McKay, 2014). To date the literature on the application of repurposing in qualitative research, particularly in the context of WIL, is sparse and relatively new.

Unlike quantitative data, that relies on replication for validity, qualitative data, such as interviews, cannot be reproduced as it is bound to a particular time, place and person or people. Therefore, the notion of “fit for purpose” should be considered before embarking on repurposing WIL datasets. The preservation of the original data is necessary and done by copying the existing dataset or the parts required. It needs to be clear how the data was initially generated to ensure the credibility, appropriateness and authenticity for accurate and meaningful future applications.

There are several benefits of repurposing data as it provides researchers access to data that may be otherwise inaccessible and expensive or challenging to collect, such as interviews and reflective journals in our research. The combining of whole or parts of datasets and reanalysis from a different perspective may elicit findings otherwise unobtainable and unforeseen. In the case of our research, working together on repurposing our data is also mutually advantageous for the generation of research outputs and is an opportunity for international research collaboration, both outcomes highly valued by universities. This approach has the capacity to result in knowledge enhancement, transfer and generalisability that was beyond the original intention of the research.

While there are benefits, there are also some issues to consider including; how much work is required to prepare the raw data for its new analytical potential and the value of the data beyond its original intended use (Bonde et al., 2019; Palmer et al., 2011); knowing how the data may have been processed (de-identification, type of transcription etc); influence of context on why the data was generated and possibly influences of other factors such as time or place. An important consideration is to examine alignment of the dataset with the methods and tools for new applications (Palmer et al., 2011).

Some additional concerns to contemplate, include:

- ensuring acknowledgement of where the data came from;
- ensuring that the original purpose of the data is clear and transparent;
- whether any ethical or other constraints should be placed on how the existing data can be used;
- the question of whether the data is constrained by a particular qualitative methodology or set of assumptions that might affect how it can be reasonably reused.

When repurposing data we need to carefully consider the epistemological perspectives under which it was collected and consequently whether we can introduce cross-contextual generalisations. The application of any dataset is determined by the research problems being examined by the user community (Palmer et al., 2011). Clearly there are a number of important issues to consider when repurposing data sets. We have identified some important ones, but there may be others.

MULTI-METHOD RESEARCH

Since our research not only considers repurposed data, but also the use of different types of data, some consideration of methodological issues in relation to mixing data types is needed. The terms multi-method and mixed methods are often used interchangeably, however there are differences between these research designs. Mixed methods involve the combined use of quantitative and qualitative data collection approaches within a single research project (Creswell & Plano-Clark, 2018; Morse, 2015). There appears to be little consensus on what exactly multi-method studies involve and it is currently being used to refer to a wide range of approaches. At present the term has been used to refer to studies with:

- multiple data sources from a singular paradigm, whether it be two or more qualitative studies (Qual-Qual) or two or more quantitative studies (Quan-Quan); or
- multiple data sources from multiple paradigms (e.g., Quan-Qual).

Usually these are two or more separate data sets, consisting of different participants and different methods of data collection (Hesse-Biber et al., 2015). In some definitions of multi-methods research there is a clear intention of using multi-methods in the original research design, so one of the data sets is designated as a core (sometimes referred to as ‘complete’ or ‘main’) component (which is carried out first) and the other a secondary (‘supplemental’) component (which builds on the findings of the first) (Morse & Cheek, 2014; Hesse-Biber et al., 2015).

In this paper we are using the term multi-methods to refer to the use of two different types of qualitative approaches in the same study, not mixed methods in the sense of combining qualitative and quantitative data. Our is thus a Qual-Qual design. A Qual-Qual multi-method design can be used “to obtain different perspectives or to obtain a more detailed and comprehensive perspective of a particular phenomenon” (Hesse-Biber et al., 2015, n.p.; see also Morse, 2010). In our research approach we weight each data set equally i.e. there is no primary and secondary data source. This means that each study could be published as standalone research, as opposed to only the core study being publishable without the other (Morse & Cheek, 2014). Alternatively, we could also consider the option of combining the two datasets and analysing this combination as a single entity.

There are a range of possible benefits, issues and caveats with using multi-method approach using our WIL research as an example (Table 1). Many of these also apply to repurposing data.

TABLE 1: Benefits, issues and considerations for using multi methods approach

Benefits	Issues	Considerations
<ul style="list-style-type: none"> • Cost and time effective - can draw on data from multiple sources • Potentially provides a richer source of data than each data source alone, i.e. diverse perspectives, data source complement the other 	<ul style="list-style-type: none"> • Direct comparison of findings may not be possible, however may be able to explore contrasts in the findings • Important to acknowledge the limitations of each data set individually and combined (e.g. different disciplines/fields) • The assumptions underpinning each approach may differ 	<ul style="list-style-type: none"> • The different purposes for which each data set was collected • The different methods of data collection (interviews, reflective diaries) • Different levels of prompting about the topic • Supervisors are reflecting on student emotions, whereas students talking about their own emotions • Whether to analyse separately or combine

IMPLICATIONS FOR OUR RESEARCH

In terms of our own WIL research there are several questions that need to be contemplated.

Firstly, is the data fit for the new purpose we intend to use it for?

- Are the participants in both studies suitable for the new research?
- Is anyone missing from the data?
- Does the data fully capture what is needed for the new study?
- What might be missed out?
- Will analysing both data sets provide new insights?

Secondly, what are limitations of the multi-method approach of analysing and comparing data from student reflections and staff interviews?

- How will data collection methods influence our interpretation of the data?
- How will data collection mediums influence our interpretation of the data?
- How can we overcome this?

We are in the fortunate position of having the originators of both datasets as part of the research team. This provides valuable insights in the conditions of the data collection which will aid us in understanding and guiding our interpretation. It will also help guard against unreasonable assumptions. We also intend to undertake an extensive literature review to provide information of emotions and triggers in WIL to act as a means of triangulating the data. This will be particularly useful in uncovering any emotions that are not reported in either study. Our final conundrum is the question of whether to combine data sets for a single analysis, or whether to analyse them separately and compare results.

CONCLUSION

Re-using and repurposing existing datasets is a worthwhile consideration as it has the potential to unlock new possibilities in WIL research and augment the strength of our research. However, measures are needed to ensure consistency and robustness of data, including: clear understanding of the conditions under which the data was collected, and the associated limitations for interpretation; ensuring data is 'fit for purpose' in a new context; and triangulating with multiple sources.

This paper is intended as an exploration of a novel methodology. We offer this discussion as a stimulus to encourage other researchers to think about new ways of tackling complex topics. We do not pretend to have all the answers but would like to open the space to consider some possibilities.

REFERENCES

- Baker, M. (2012). Quantitative data: Learning to share. *Nature Methods*, 9(1), 39-41. <https://doi.org/10.1038/nmeth.1815>
- Bonde, M., Bossen, C., & Danholt, P. (2019). Data-work and friction: Investigating the practices of repurposing healthcare data. *Health Informatics Journal*, 25(3), 558-566. <https://doi.org/10.1177/1460458219856462>
- Castellanos, A., Castillo A., Lukyanenko R., & Tremblay M. C. (2017). Understanding benefits and limitations of unstructured data collection for repurposing organizational data. In S. Wrycza & J. Maślankowski J. (Eds.), *Information systems: Research, development, applications, education*. SIGSAND/PLAIS 2017. Lecture Notes in Business Information Processing, vol 300. Springer, Cham.
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research*. SAGE.
- Fox, R. (2004). Moving from data to information. *OCLC Systems & Services: International digital library perspectives*, 20(3), 96-101. <https://doi.org/10.1108/10650750410551415>
- Hesse-Biber, S. N., Rodriguez, D., & Frost, N. A. (2015). A qualitatively driven approach to multimethod and mixed methods research. In S. N. Hesse-Biber & R. B. Johnson (Eds.), *The Oxford handbook of multimethod and mixed methods research inquiry*. <https://doi.org/10.1093/oxfordhb/9780199933624.013.3>
- Lucas, P. (2015). *Exploring critical reflection in cooperative education: A case study doctoral thesis*, Deakin University, Melbourne, Australia. <http://dro.deakin.edu.au/view/DU:30084875>
- McKay, D. (2014). *Bend me, shape me: a practical experience of repurposing research data*. Paper presented at the Proceedings of the 14th ACM/IEEE-CS Joint Conference on Digital Libraries, London, United Kingdom.
- Morse, J. M. (2010). Simultaneous and sequential qualitative mixed method designs. *Qualitative Inquiry*, 16(6) 483–491.
- Morse, J. M. (2015). Issues in qualitatively-driven mixed method designs: Walking through a mixed-method project In S. N. Hesse-Biber & R. B. Johnson (Eds.), *The Oxford handbook of multimethod and mixed methods research inquiry*. <https://doi.org/10.1093/oxfordhb/9780199933624.013.14>
- Morse, J. M., & Cheek, J. (2014). Making room for qualitatively-driven mixed-method research. *Qualitative Health Research*, 24(1), 3-5. <https://doi.org/10.1177%2F1049732313513656>
- Palmer, C. L., Weber, N. M., & Cragin, M. H. (2011). The analytic potential of scientific data: Understanding re-use value. *Proceedings of the American Society for Information Science and Technology*, 48(1), 1-10.
- Piwowar, H. A., & Chapman, W. W. (2008). *Envisioning a biomedical data reuse registry*. Paper presented at the American Medical Informatics Association (AMIA) Annual Symposium proceedings, 1097. Retrieved from <http://europepmc.org/abstract/MED/18998885>
- Winchester-Seeto, T., & Rowe, A. D. (2019). Who is holding the mirror? Debriefing and reflection in work-integrated learning. *International Journal of Work-Integrated Learning*, 20(4), 335-349.

The changing professional development needs of the international work-integrated learning community

KARSTEN E. ZEGWAARD

University of Waikato, Hamilton, New Zealand

SONIA FERNS

Curtin University, Perth, Australia

KRISTINA JOHANSSON

University West, Trollhättan, Sweden

KATHARINE HOSKYN

Auckland University of Technology, Auckland, New Zealand

NORAH MCRAE

University of Waterloo, Waterloo, Canada

JUDIE KAY

WACE, Australia/Canada

INTRODUCTION

The practice of work-integrated learning (WIL) continues to expand across the higher education sector, with many universities introducing or expanding their WIL offerings to align curriculum more closely to employability outcomes (Rowe & Zegwaard, 2017). Universities in Australia have rapidly developed WIL, with all universities offering WIL in almost all the disciplines (Universities Australia, 2019). In New Zealand, WIL has been given increasing attention with the Universities NZ, the peak body for NZ universities, DVCA's Committee creating a WIL sub-committee to develop national strategy, and with the University of Waikato introducing compulsory WIL for all undergraduates degrees (Muller et al., 2021). The Canadian government recognised WIL as crucial to economic advancement and provided CAD\$150 million to support work placement opportunities (Beaulne-Stuebing, 2019).

This rapid development presents challenges for staff involved with WIL practice, administration, teaching, curricular design, and research, many of whom were staff that have moved sideways into WIL (Zegwaard et al., 2019). In response to these needs, as well as a way to better connect WIL staff globally, a team developed the GLOBAL WIL modules to provide online professional development opportunities for WIL staff (Zegwaard et al., 2016), with the number of modules on offer recently expanded to six (Ferns et al., in press).

An international professional development needs survey was conducted in 2018 to better understand what the international professional development needs are for the WIL community and to guide the development of new GLOBAL WIL modules. This survey, the first of its kind, asked participants to rate the interest level and the perceived need for 24 professional development topics, with the international data published in IJWIL (Zegwaard et al., 2019), nationalised data presented at the national WIL conferences in Australia (Kay et al., 2018), Canada (McRae et al., 2018), and New Zealand (Hoskyn et al., 2018), and nationalised data shared with South Africa, UK, and Sweden.

The 2020 COVID-19 pandemic significantly impacted the practice of WIL, particularly practices reliant on work placement models of WIL where many placements shifted to online/remote work placements (Kay et al., 2020; Pretti et al., 2020). Alternative WIL models to work placements were rapidly developed or expanded to accommodate the restricted access to workplaces (Zegwaard et al., 2020), with a particular focus on non-placement models of WIL (Dean & Campbell, 2020). The COVID-19 pandemic presented perhaps the most significant challenge faced by WIL practitioners (Zegwaard et al., 2020) with many educators resorting to ‘panic-gogy’ as learning content delivery changed to online (Dean et al., 2020).

In response to this rapidly changing landscape of WIL, the 2018 WIL Professional Development Survey was repeated, with the inclusion of additional topics, and also data collection around aspects of the impact of the pandemic. This paper here will discuss findings around the impact of COVID on WIL practitioners, the perceived importance of professional development topics, and shifts in importance compared to the 2018 study.

METHODS

Similar to the 2018 study, an anonymous online survey (using SurveyMonkey) was developed containing questions that explored aspects of demographics, accessibility to WIL professional development opportunities, and perceived professional development needs. Additional questions were added around the impact of COVID-19 and how these influence professional development needs.

All known WIL associations were approached to distribute the survey to their members, with data collected (so far) over a period from October, 2021 to March, 2022. The true number of participants approached (total sampling cohort) was difficult to determine as the associations were asked not to share their contact list. The total responses were 299, notably less than the 2018 survey of 688 responses. Responses were received from 11 countries, of which Australia and Canada were the largest cohorts. The reduced number of responses compared to the 2018 study were proportionally distributed over the same countries as the 2018 survey.

Data analysis was undertaken through Microsoft Excel and open-ended questions were thematically analysed. The combined international data is the focus of this paper, with fuller details to be published in IJWIL at a later date, and nationalised data to be presented at national conferences.

RESULTS AND DISCUSSION

Impact of COVID-19

Participants were asked about the impact of COVID-19 on their work-life, with 27% of participants indicating the impact was negative, 63% neutral, and 8% positive. Explanations provided by participants were generally mixed no matter how negative or positive they felt about the impact of COVID-19. Participants that indicated a negative impact mostly commented about the difficulty of securing work placements, especially where WIL was a core part of the curriculum, and also commented on the lack of face-to-face time with students, lack of opportunities for international placements, and the difficulty of balancing work-life/home-life. Participants who indicated a neutral response mostly

gave mixed comments where they indicated negative aspects (increase in workload, stress, managing problems, teaching and working online) as well as positive aspects (working from home, supportive colleagues, etc), with several commenting that ‘on the balance’ there was no change.

Participants that indicated positive impacts highlighted the advantage of working for the public service organisation (government funded) such as a university, and generally stated the impact of the pandemic was challenging but mostly positive. The comments suggested a common element of the positive impact was the relief of working in a (largely) publically funded sector where funding did not immediately change as a result of the pandemic.

The 27% of participants that indicated a negative impact of the pandemic described significant upheaval in their job situation, with many indicating that their positions were now less secure, and some indicating their roles within the institution had either changed or they were no longer with the institution. Generally across all participants, 41% identified lack of international travel as a challenging issue, 35% having less access to funds for professional development, 20% having more responsibilities, and 27% indicating they had less time for professional development.

Professional Development Needs

Most participants indicated that their professional development needs had not changed (72%), with 5% indicating that their needs had decreased, whilst 21% indicated it had increased. The latter group mainly described increases in professional development needs around working and teaching in an online environment, however, achieving equitable access for all students to WIL opportunities was also a recurring theme.

Participants were asked to select a maximum of only three topics of professional development (additional questions exploring general interests were also included but not presented here). This data allowed for the ranking of importance based on the ratings data, with the five most important and five least important topics presented in Table 1.

The survey included several additional topics not included in the 2018 study. Of the new topics added to the survey, *equity, diversity and inclusion in WIL* was rated as the most important topic, equal to *evaluating the quality and impact of WIL* (which was the most important topic in the 2018 survey). The other notable new topics of *delivering WIL online* ranked 6th, *engaging with workplaces, staff, and students* ranked 13th, and *entrepreneurial and enterprise* ranked 16th.

TABLE 1: The five most important and least important professional development topics

Five most important
Equity, diversity, and inclusion in WIL *
Evaluating the quality and impact of WIL *
Curricular design and mapping WIL activities to learning outcomes #
Engaging with industry/workplaces #
Health & Safety, risks, and legal requirements when engaging with WIL
Five least important
Developing group WIL projects/placements ^
Educational theories underpinning WIL ^
How to best match students to workplaces
Engaging effectively with faculty/academic staff
Providing feedback on assessments

Note: *, #, and ^ indicates an equal ranking order.

When comparing to the ranking order from the 2018 survey, the biggest increases in importance relevant to other topics (with new topics removed from the data) was observed for *Health and Safety* (up nine to 5th most important), and *setting up quality WIL*, *ethical dilemmas*, and *managing WIL staff* each up by five. Several professional development topics decreased relevant to the other topics, most notable of which *educational theories* dropping by 11, *matching students* dropping by seven, *engaging with faculty* dropping by six, and *internationalisation of WIL* dropping by five.

CONCLUSION

The survey data indicated that many members of the WIL community experienced significant changes to their work conditions due to the pandemic, however, many participants reporting that they had experienced both positive and negative impacts that, on the balance, resulted in participants indicating an overall neutral perception of the impact of COVID-19. The third of participants that reported overall negative impacts clearly experienced significant upheaval, including increases in responsibilities, role changes, and loss of positions. The common negative impact across the whole WIL community was less time and less funds to undertake professional development. The changes in importance of professional development needs are, to some extent, perhaps not surprising, with health and safety increasing the most in perceived importance. The high ranking of topics related to the online environment correlates with comments around the challenge of working and teaching online. The latter may also reflect the increase of importance of managing WIL staff, which would also have occurred predominantly in an online, remote environment. The data was collected end of 2021, at which point working and teaching in an online environment was well established; the high ranking of online delivery of WIL as a professional development need may be an indication that online WIL is becoming a more common model of WIL than prior the pandemic.

Albeit, it was encouraging that many participants reported a neutral impact of the pandemic, these participants also indicated there were many changes and challenges. The perceived neutral impact was, as indicated, on the balance of both negative and positive impacts, where further comments also

suggested that, despite the challenges, the sense of relief of having secure employment and the ability to successfully work within an online environment were also key factors to the perceived neutral impact.

ACKNOWLEDGEMENTS

The authors would like to gratefully acknowledge the assistance with the distribution of the survey by the following associations: ACEN, ASET, CEWIL, VILA, WACE, and WILNZ. Nationalised data from the same research will be presented at the ACEN, CEWIL, and WILNZ conferences.

REFERENCES

- Beaulne-Stuebing, L. (2019). Federal government details \$150-million strategy to promote study abroad. *University Affairs*. <https://www.universityaffairs.ca/news/news-article/federal-government-details-150-million-strategy-to-increase-number-of-students-studying-abroad/>
- Dean, B. A., & Campbell, M. (2020). Reshaping work-integrated learning in a post-COVID-19 world of work. *International Journal of Work-Integrated Learning*, 21(4), 355-364.
- Dean, B. A., Eady, M. J., & Yanamandram, V. (2020). Advancing non-placement work-integrated learning across the degree [Editorial]. *Journal of University Teaching & Learning Practice*, 17(4). <https://ro.uow.edu.au/jutlp/vol17/iss4/1>
- Ferns, S., Kay, J., Hoskyn, K., Zegwaard, K. E., Johansson, K., & McRae, N. (in press). Introducing the Global WIL Modules: Global connectivity for WIL practitioners. In TBA (Ed.), *The 2022 WACE International Research Symposium, Japan*. WACE.
- Hoskyn, K., Zegwaard, K. E., Ferns, S., Kay, J., Johansson, K., & McRae, N. (2018). *Preparing universities to engage with industry: Building global capacity among work-integrated learning academics and practitioners*. Association for Commonwealth Universities conference on 'Universities of the future: Global perspective for human resources', University of Waterloo, Waterloo, Ontario, Canada. <https://www.dropbox.com/sh/qy5owoksxesbzqc/AAA4sWhl5z-xPGzd-YImghRHa?dl=0&preview=Day+3+-+G1+-+Norah+McRae+-+Preparing+universities+to+engage+with+industry++++FINAL+070918.pptx>
- Kay, J., Ferns, S., Zegwaard, K. E., Johansson, K., McRae, N., & Hoskyn, K. (2018). Professional development needs of the Australian work-integrated learning community. In J. Smith, J. Robinson, & M. Campbell (Eds.), *WIL: Creating Connections, Building Futures – Proceedings of the 2018 ACEN National Conference* (pp. ##-##). Australian Collaborative Education Network Limited.
- Kay, J., McRae, N., & Russell, L. (2020). Two institutional responses to work-integrated learning in a time of COVID-19: Canada and Australia. *International Journal of Work-Integrated Learning*, 21(5), 491-503.
- McRae, N., Zegwaard, K. E., Johansson, K., Hoskyn, K., Kay, J., & Ferns, S. (2018). *Exploring the professional development needs of work-integrated learning practitioners in the international community: Canadian comparisons* Paper presented at the Cooperative Education and Work-Integrated Learning Canada National Conference 2018, Montreal, Canada.
- Muller, S., Zegwaard, K. E., & Ferrier-Kerr, H. (2021). Developing institutional-wide practice of work-integrated learning. In K. E. Zegwaard & K. Hoskyn (Eds.), *Work-Integrated Learning New Zealand 2021 Refereed Conference Proceedings* (pp. 39-44). Work-Integrated Learning New Zealand.
- Pretti, T. J., Etmanski, B., & Durston, A. (2020). Remote work-integrated learning experiences: Student perceptions. *International Journal of Work-Integrated Learning*, 21(4), 401-414.
- Rowe, A. D., & Zegwaard, K. E. (2017). Developing graduate employability skills and attributes: Curriculum enhancement through work-integrated learning [Special issue]. *Asia-Pacific Journal of Cooperative Education*, 18(2), 87-99.
- Universities Australia. (2019). Work-integrated learning in universities: Final report. <https://bit.ly/3jsyw3z>
- Zegwaard, K. E., Johansson, K., Ferns, S., Hoskyn, K., McRae, N., & Kay, J. (2016). Online professional development module for WIL practitioners: Participants' experience and impact on their practice. In K. E. Zegwaard, M. Ford, & N. McRae (Eds.), *Refereed proceedings of the 2nd international research symposium on cooperative and work-integrated education, Victoria, British Columbia, Canada* (pp. 213-218). University of Waikato.
- Zegwaard, K. E., Johansson, K., Kay, J., McRae, N., Ferns, S., & Hoskyn, K. (2019). Professional development needs in the international work-integrated learning community [Special issue]. *International Journal of Work-Integrated Learning*, 20(2), 201-217.
- Zegwaard, K. E., Pretti, T. J., & Rowe, A. D. (2020). Responding to an international crisis: The adaptability of the practice of work-integrated learning. *International Journal of Work-Integrated Learning*, 21(4), 317-330.

Editors: T. Judene Pretti, Jenny Fleming, & Karsten E. Zegwaard

Refereed Proceedings of the 4th WACE International Research Symposium
on Cooperative and Work-Integrated Education, 2022,
Kanazawa Institute of Technology, Japan

ISBN 978-1-7386618-0-0



Published by the WACE Inc, Waterloo, Canada

© WACE Inc

Available online: <http://www.waceinc.org/>