Work experience reduces a gender-based gap in time on tasks with supervisors in co-operative education

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Using a cross-sectional survey of co-operative education students, this study explored relationships between students' gender, work experience, time spent on tasks with supervisors, and self-reported learning. Inexperienced men spent 50% more time on tasks with supervisors than inexperienced women. Work experience (completing at least one co-operative education work term) significantly reduced this gender-based gap. Further, time on tasks with supervisors was positively associated with self-reported learning among women, especially inexperienced women, but not for men. The findings are interpreted using the literature on gender roles at work and students' experiential learning outcomes. Early career women may be socialized into gender roles that limit access to supervisors' time. Work experience may help such women develop human capital such as confidence and social skills that closes gender-based gaps in learning opportunities.

Keywords: gender, work experience, time on tasks, survey, co-operative education, work-integrated learning

A substantial amount of literature suggests the importance of time spent on tasks with supervisors to students' learning during work-integrated learning (WIL) experiences (Korte, 2009; Korte & Li, 2015; Korte & Lin, 2012). More time on tasks means more opportunities to practice and learn (Gettinger, 1985). When that time involves supervisors, learning may be especially rich because it provides space for supervisors to observe students' performance, provide feedback, and model behavior on a given task (Rowe et al., 2012). For example, consider a student and supervisor co-writing a project report. The supervisor's participation in that task provides space to show the student what 'good performance' looks like and to direct the student's behavior accordingly. This is quite different from providing feedback on a completed project report.

This paper explores relationships between students' gender, work experience, time on tasks with supervisors, and self-reported learning. One area of research suggests that early-career women are socialized into gender roles that generate feelings of inadequacy (Bordalo et al., 2019; Langan et al., 2008; Torres-Guijarro & Bengoechea, 2016). Such feelings may limit women's willingness to access supervisors' time at work. Supervisors may also see women as less competent and less worthy of their time (Bowen, 2019; Correll, 2004). This suggests a gender-based gap in time on tasks with supervisors which holds true even in more egalitarian societies (e.g., Gronlund, 2011; Halldén, 2014). Another area of research suggests that work experience is an opportunity to develop confidence in oneself at work (Freudenberg et al., 2013; Reddan, 2016) and may reduce a gender-based gap in self-reported competence (Arsenis & Flores, 2021). This may suggest that work experience reduces a gender-based

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gap in time on tasks with supervisors. The present study explores these dynamics to address calls for research on gender equity (Bowen, 2019) and temporal dynamics (Rowe, 2017) in WIL.

Gender Work Experience and Time on Tasks with Supervisors

Gender identity is referred to as the socially constructed roles and expressions of an individual. It impacts how individuals perceive themselves and how they act, and interact (Canadian Institutes of Health Research, 2015). Gender is not confined to simply being men, women, girl, or boy (also known as a binary), and can change over time. Indeed, the authors acknowledge that gender can be a complex, personal, meaningful, and important construct for individuals. It is acknowledged that the information used for this study was gathered from a 2020 survey which was largely limited to man and woman gender identities. Therefore, for this paper, only these two gender identities are covered.

Gender differences in the labor market have been looked at in a variety of contexts (Babcock et al., 2017; Fana et al., 2021). The literature suggests that gender dictates the experience that students have during WIL opportunities. Common differences that are noticeable in workplace settings are attributed to the physiological differences that falsely encourage employers to assume that each gender brings its distinct benefits. For example, men are more likely employed in roles that require physical work and women are more likely employed in roles that require intellectual or relational work (Magnusson & Tåhlin, 2018). Compounding these factors are preferences and choices that women possess in contrast to many of their male counterparts (Fana et al., 2021). For example, women are likely to seek out roles that offer family-friendly work hours and opportunities to work with children (Brutger & Guisinger, 2021).

Gender also affects students' learning, appraisal, and satisfaction. Langan et al. (2008) and Torres-Guijarro and Bengoechea (2016) revealed that female students underreport their competence and confidence. Indeed, meta-analytic results suggest this is a broad phenomenon (Voyer & Voyer, 2014). Given that learning is the primary outcome of WIL, these results place gender in the spotlight of WIL research. More so because the influence of gender on WIL experiences extends beyond learning outcomes. It may influence students' performance appraisals, such that women are perceived less favorably than men (Chopra et al., 2020), but may also affect students' satisfaction, such that women experience more feelings of inadequacy and lower satisfaction (Bowen, 2019; Chopra et al., 2020).

Bowen's (2019) study of gendered work experiences provides the strongest clue that women have less access to time on tasks with supervisors. Bowen's interviews with WIL students suggested that women felt inadequate and worried about presenting as pushy or threatening. That is, much more than their men colleagues, women were careful about their social interactions and mindful of impression management. This could have implications for time on tasks with supervisors. While some research suggests that women are more likely to seek support at work (Poleacovschi et al., 2021), Bowen's (2019) research suggests that women WIL students may be hesitant to invite supervisors into their work. This seems consistent with the observation that men assert themselves at work more than women and have less hesitation about asking supervisors to share their resources, including their time (Bordalo et al., 2019; Webb et al., 2020). This paper seeks clarity on how gender relates to time on tasks with supervisors and what this might mean for WIL experiences.

Experiential and WIL theories suggest that learners' characteristics are important to learning outcomes. For example, Mezirow's (1997) transformative learning theory proposes that what is learned and how it is learned depends on the learner, specifically the learner's frame of reference. This is echoed in the organizational literature which describes learning at work as an interactive process between the

individual and their situation (Ashforth et al., 2007). This is relevant to the present research because it suggests that work experience is likely associated with student learning. The more work experience students gather, the greater their ability to make sense of new challenges, deal with those, and, ultimately, organize experiences in a mental framework (Adkins, 1995; Beus et al., 2014; Weick, 1995).

Work experience may also shape the relationship between gender and time on tasks with supervisors. Our specific interest in this study is the relationship between previous work experience and time on tasks with supervisors. As mentioned earlier, women are often socialized into gender roles that prescribe lower confidence (Bordalo et al., 2019), and this may lead them to assert themselves less in their supervisors' schedules. However, WIL research shows that work experience enhances students' confidence. For example, Reddan (2016, 2017) showed that work experience was associated with increases in students' reports of self-efficacy. Other research (Arsenis & Flores, 2021) showed that gender-based gaps in self-reported skills, although modest, are larger for inexperienced students than for experienced ones. If confidence is somehow related to accessing supervisors' time, as Bowen's (2019) findings seem to suggest, then such results indicate that work experience may close a gender gap in time on tasks with supervisors.

Time on Tasks with Supervisors and Self-Reported Learning

Supervisors' participation may strengthen students' WIL. Theories about experiential learning emphasize the importance of other organizational insiders like co-workers and supervisors in the learning process (Korte, 2009). For example, organizational socialization theories suggest that supervisors facilitate students' understanding of their roles and organizational contexts (Korte & Li, 2015; Korte & Lin, 2012). The WIL literature emphasizes the role of the supervisor in students' learning. It explains that supervisors support students' sense-making and guide them through challenges (Rowe et al., 2012). It is argued here that supervisors' participation in students' tasks (i.e., time on task with supervisors) will be especially important to students' learning. Consider again a student and supervisor co-writing a project report. A working session in which the student and supervisor work closely together allows the supervisor to model behavior. For example, they could demonstrate how to search for and take notes on articles. Also, such participation allows the supervisor to provide feedback on the student's performance at that moment. This time together may be a richer learning experience than a typical feedback model in which students perform a task and receive feedback later. The link between time on tasks with supervisors and student learning is regarded as uncontroversial. Nevertheless, the present study sought to quantify that link for the first time.

In summary, the literature suggests that students' gender and work experience may associate with time on tasks with supervisors, and that these personal characteristic and time allocation variables may have implications for students' learning. The study described below explored these relationships. It was guided by two research questions. Research question 1 asks: how are students' gender and work experience associated with time on tasks with supervisors? Research question 2 asks: how is time on tasks with supervisors associated with self-reported learning during organizational socialization? Both questions are addressed using a survey of students' time allocations during the first three months of a four-month paid co-operative education (co-op) work term.

METHOD

Procedure

After institutional ethics clearance (Project number 42139), email invitations were sent to potential participants in March 2020. A survey was administered within the first three months of a co-operative education work experience. This is a time when students are learning to adjust to a new work role which is a challenging time for students and employers alike (Pennaforte & Pretti, 2015). This time also coincided with the onset of the COVID-19 pandemic so students and employers were also adjusting accordingly. Of 8,355 students invited to the study, 1,170 consented to participate and provided at least partial data. This response rate (14%) was consistent with previous research on students at this institution. On the survey, students were asked to provide information about their work tasks, interactions with others at work, personal characteristics, and learning. All participants received $5.00 gift cards in appreciation for their time. The sections on work tasks were based on a modified time-diary approach that is common in social science research. Such an approach has been used to, as one example, explore how much time faculty members spend on various tasks (O'Meara et al., 2017). Similar to this approach, the survey asked students to report the (percentages of) time they spent on various tasks and the extent to which their supervisors participated in those tasks.

Participants

Participants were undergraduate co-operative education students enrolled in a paid co-op program, and were working between January and April 2020 (i.e., the Winter 2020 work term). Most (64%) participants were male. Two-fifths (40%) of participants were studying engineering, and the rest were distributed across various social sciences, humanities, environment, arts, math, and science programs. Table 1 provides details on the participants' characteristics.

TABLE 1: Participant gender, number of work terms completed before the study, and faculty of study.

Variables	*n*	%
Gender		
Men	410	64.0
Women	231	36.0
Work terms completed before the study		
0	215	33.5
1	146	22.8
2	65	10.1
3	148	23.1
4+	67	10.5
Faculty of study		
Arts	68	10.6
Environment	29	4.5
Engineering	260	40.6
Health	68	10.6
Mathematics	110	17.2
Science	72	11.2

Measures

Work experience

Participants were asked to indicate the number of co-op work terms they had completed including their current term (i.e., the Winter 2020 term). Students who were on their first co-op work term were considered inexperienced (coded as '0') and students who had completed at least one co-op work term before the study were considered experienced (coded as '1').

Gender identity

Participants were asked to report their gender identity by selecting from a list of options. Nearly all participants selected either male or female as their gender identity. There were insufficient responses from other gender identity categories to be included in statistical analyses. These categories include trans, two-spirit, non-binary, and other. The authors recognize the complexity of gender that is missed in this paper's binary operationalization of gender. Gender identity for those participants included in analyses was coded as 1 = female and 2 = male.

Time on tasks with supervisors

Participants were asked to identify their three main tasks at work. For example, participants may have written a project report as one such task. Then, participants were asked to report the percentage of their total time at work that they spent on each task. For example, participants may have indicated that 30% of their total time at work was spent writing a project report. Furthermore, participants were asked to report the percentage of time that their supervisors were involved in their tasks. For example, they may have indicated that 5% of all time spent writing a project report involved a supervisor. From these data, we calculated a 'time on tasks with supervisor' variable. We chose to represent time as a percentage rather than in units such as hours because hours at work differ greatly between WIL forms.

Learning

Participants were asked to indicate the extent to which they had learned at work using a single item. Responses were provided on a five-point scale where 1 = not at all and 5 = a great deal.

Analyses

First, we used independent samples t-tests to examine differences in time on tasks with supervisors between men and women who were either inexperienced or experienced. Second, we used multiple linear regression analyses to examine associations between time on tasks with supervisors and self-reported learning.

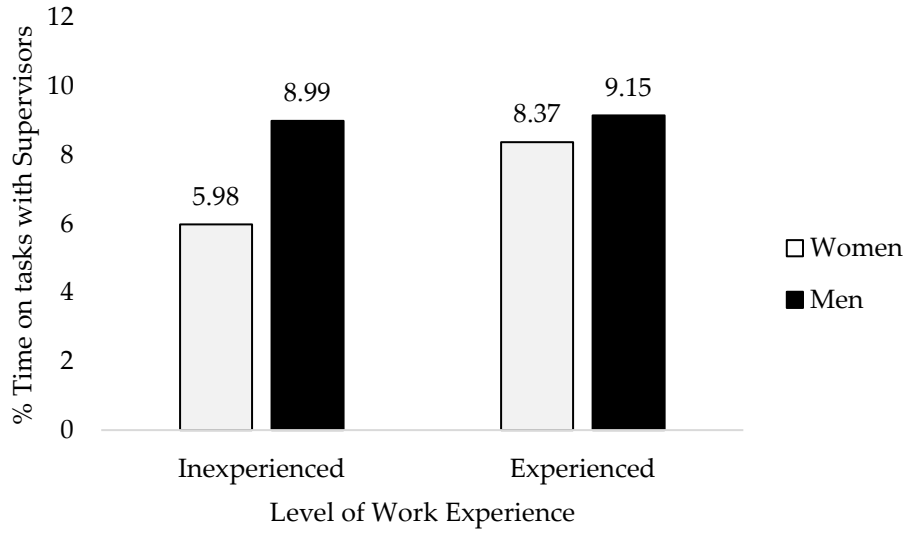
RESULTS

Gender, Work Experience and Time on Tasks with Supervisor

The percentage of time spent on tasks with supervisors ranged from 0% to 69.3%. On average, participants spent 8.01% (SD = 9.75) of their time on tasks with their supervisor. There was no significant difference in time on tasks with supervisors between men (M = 9.22%, SD = 10.87) and women (M = 7.79%, SD = 9.22), $t(639) = 1.77$, $p = .08$, $d = .15$[-.02, .31]. We explored variations in time on tasks with supervisors at levels of gender and work experience. There was no difference in time on tasks with supervisors between inexperienced men (M = 8.99%, SD = 12.93) and experienced men (M = 9.15%, SD = 10.09), $t(200) = .09$, $p = .93$, $d = .01$[-.31, .28]. Experienced women spent more time on tasks with supervisors (M = 8.37%, SD = 9.66) than did inexperienced women (M = 5.98%, SD = 7.53), t(374)

=2.54, p = .011, d = .27[.06, .48]. Inexperienced men reported more time on tasks with supervisors than did inexperienced women, $t(209)$ = 2.11, p = .036, d = .32[.02, .61]. There was no difference in time on tasks with supervisors between experienced men and experienced women, $t(365)$ = .74, p = .46, d = .08[-.29, .13]. This suggests that a gender-based gap in time on tasks with supervisors may be larger among inexperienced students than among experienced students. These analyses are visualized in Figure 1.

FIGURE 1. Percentage of time on tasks with supervisors by work experience and gender.



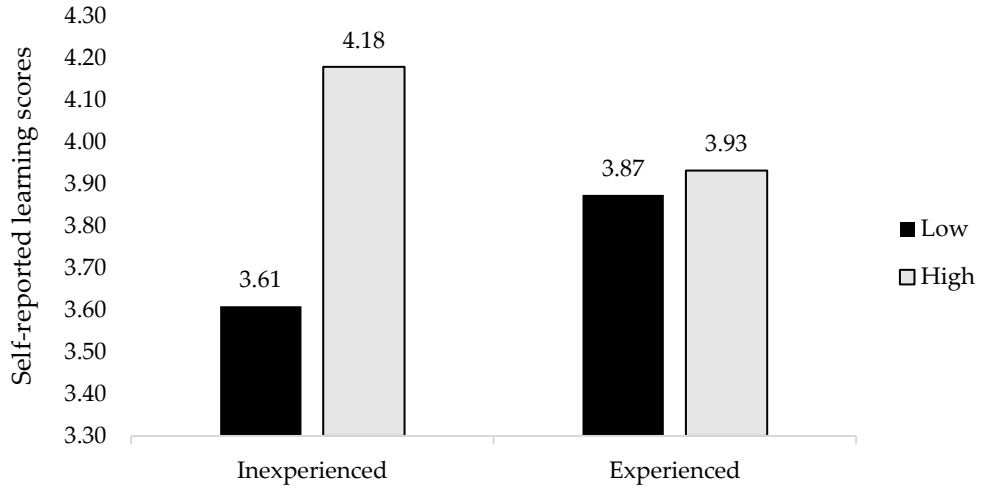
Time on Tasks with Supervisors and Self-reported Learning

Table 2 shows the results of multiple linear regression analyses in which self-reported learning was regressed on time on tasks with supervisors, work experience, and the interaction between those two variables. Two models are presented, one for men and one for women. In the model for women, time on tasks with supervisors was positively associated with self-reported learning. Work experience was not significant. The interaction term between time on tasks with supervisors and work experience was significant. This interaction was probed using the Hayes PROCESS macro for SPSS. It is visualized in Figure 2. For inexperienced women, the association between time on tasks with supervisor and self-reported learning was significant and positive, b = .035, se = .012, t = 2.996, p = .003. For experienced women, the association between time on tasks with supervisor and self-reported learning was not significant, b = .004, se = .007, t = .481, p = .631.

TABLE 2: Associations between time on tasks variables and self-reported learning by experience and gender.

	Women				Men			
	b	*se*	*t*	*p*	*b*	*se*	*t*	*p*
Time on tasks with supervisor	.016	.006	2.49	.013	.012	.007	1.848	.066
Work experience	.032	.113	.286	.775	.349	.155	2.254	.025
Interaction term	-.031	.014	-2.28	.023	-.019	.013	-1.438	.15

FIGURE 2: Interaction between experience and time on tasks with supervisor on self-reported learning for women.



In the model for men, the association between time on tasks with supervisors and self-reported learning was not significant. The association between work experience and self-reported learning was positive and significant. The interaction term between time on tasks with supervisors and work experience was not significant. These results suggest that time on tasks with supervisors was more important to inexperienced women's self-reported learning than it was for experienced women and men.

DISCUSSION

Students and supervisors worked together for less than 10% of the time that students spent working on their main tasks. While this may seem low, it makes sense. Most of the co-op students in this sample, and indeed in general, participate in the knowledge economy. In that economy, a great deal of time at work is directed to 'deep work' using human capital and intangible assets. Such deep work is often solitary. Consider our example of the student writing a project report. It seems likely that most of that task is performed alone, without the supervisors' direct involvement. Further, our result seems consistent with research on supervisors' time allocations which shows supervisors spend a modest percentage of their time directly supervising students. For example, a study of medical supervisors (Tavrow et al., 2002) showed that of all the time that such supervisors spent on 'supervisory visits', only between 9% and 15% of their time was spent observing supervisees and interacting with them.

Our first research question asked: how are students' gender and work experience associated with time on tasks with supervisors? Our analyses suggested that both gender and work experience were associated with time on tasks with supervisors and that these associations were nuanced. In the general sample, there was no difference in time on tasks with supervisors between men and women and, among those with work experience, gender was not associated with time on tasks with supervisors. However, there was a significant gender-based gap in time on tasks with supervisors between inexperienced men and inexperienced women. Inexperienced women spent nearly 6% of their time on tasks with supervisors and inexperienced men spent nearly 9% of their time on tasks with supervisors. That is, compared to inexperienced women, inexperienced men spent 50.3% more time on tasks with supervisors. This finding seems to align with those of previous research on gender roles at work. For

example, studies suggest that females may refrain from asking their supervisors for help, guidance, and advice because such support-seeking is inconsistent with their gender roles (Bordalo et al., 2019; Webb et al., 2020).

Critically, and perhaps the key finding of this paper, work experience reduced this gender-based gap in time on tasks with supervisors. If the gap in time on task with supervisors between inexperienced men and inexperienced women was 50.3%, then the gap in time on task with supervisors between experienced men and experienced women was 9.3%. This reduction seems incredibly noteworthy given the literature on supervisors' contributions to the success of students' work experiences (Rowe et al., 2012). Further, this echoes evidence that work experience builds students' confidence (Freudenberg et al., 2013; Reddan, 2016). Whereas work experience seems less important to younger men's confidence and access to supervisors' time, it seems that such experience may build this important human capital among women that results in closer relationships with supervisors.

Time on Tasks with Supervisors and Self-Reported Learning

Research question 2 asked: how is time on tasks with supervisors associated with self-reported learning during organizational socialization? For women, time on tasks with supervisors was positively associated with their self-reported learning that occurred during their work-integrated experience. This is consistent with previous research on the importance of supervisors to students' WIL (Rowe et al., 2012). But it is interesting given that women in this dataset spent very little time working on tasks with their supervisors. This finding speaks to the magnitude of supervisors' influence in WIL. Despite a small window of participation in students' tasks, supervisors can affect students' learning.

Interestingly, for men, time on tasks with supervisors was not associated with self-reported learning. This allows us to infer that work experience is more important to time on tasks with supervisors for women than for men. This could be due to men asserting themselves at work more than women and feeling a sense of heightened confidence than their women counterparts (Bordalo et al., 2019). That is, whether inexperienced or experienced, men seem to report that they are learning a great deal. This seems aligned with research on gender and the so-called Dunning-Kruger effect. While women tend to outperform men in most academic areas, they self-reported poorer performance (Voyer & Voyer, 2014). Similarly, women report lower confidence in their abilities than their equally capable peers who are men (Langan et al., 2008; Torres-Guijarro & Bengoechea, 2016). This finding suggests the importance of work experiences to female students' confidence and performance. Time spent on tasks with supervisors could alleviate feelings of low self-efficacy in the workplace often experienced by women.

While work experience alone was not associated with self-reported learning for women, the interaction between time on tasks with supervisors and experience was significant, further reinforcing the importance of women being able to comfortably request more time with and assistance from their supervisors. These findings suggest that there is more work to be done in this space. What seems to matter most now is that we ensure that women in WIL experiences feel safe, supported, acknowledged, and, in turn, willing to take risks beyond their comfort zone. This seems central to creating equitable access to time on tasks with supervisors.

Limitations and Directions for Future Research

Learning can mean lots of things, and we did not measure that. So, this complicates the picture of the role of experience. Previous experience has different effects on what newcomers learn. While previous

work experience can positively affect newcomers' task performance, it can also lead to slower integration of organizational values (Ashforth et al., 2007). Moreover, the use of self-reported assessment subjects this study to the well-known limitations of such measures, including subjectivity and inaccurate recall. Another limitation of this study was the very low rate of response to the survey from individuals that identified as neither men nor women (less than 2%). This limits our ability to offer nuanced insights and make distinctions important to specific and multi-dimensional gender roles in society. Finally, this study was conducted at the onset of COVID pandemic which required many students to transition to remote or hybrid co-op program. While this may have affected students learning and interaction with supervisors generally, we do not expect the effect to differ significantly across gender.

Future research may consider the intersectionality of gender and other identities to better understand students' interactions with supervisors at work. Individuals embody many identities, but we considered only gender in the present study. Examining identities based on race, ethnicity, social class, and sexual orientation, as some examples, could reveal much about how students access supervisors' time at work. Similarly, future research could explore interactions between students' identities and supervisors' identities. This information was not available to us for our analyses. Perhaps contrary to lay beliefs, research has shown that cross-gender supervisory relationships are associated with higher supervisee perceptions of support (Sosik & Godshalk, 2005). This may suggest that students would access more time on tasks with supervisors who are gender dissimilar. Exploring this seems especially important to address concerns about the WIL experiences among students from equity-deserving groups. Finally, future research may consider investigating the relationship between gender identities and the types of tasks allocated to co-op students. It will be insightful to see if the impact of gender roles is reflected in allocation of tasks in co-op programs.

Implications for Practice

These findings present an opportunity for WIL practitioners to revisit preparatory materials for students and supervisors to ensure that all parties are prepared to engage effectively in the WIL experience. WIL supervisors may be novices to supervision themselves (Martin et al., 2019) and thus can benefit from training and resources which speak to their role and responsibilities as a WIL supervisor (Brewer et al., 2021; Rowe et al., 2012). These materials could explicitly mention the need for equitable time on tasks for WIL students of all genders. Given the self-reported increases in learning associated with supervisor time on task for inexperienced women, supervisors may also want to create structures that allow for more contact points with this group of learners. This could be done through more regular check-ins or the development of formal mentorship programs for women.

Students also need to be prepared to effectively ask for the support and time required of their supervisors. Pre-WIL training materials should include techniques for approaching a WIL supervisor and asking for assistance or additional support. Testimonials and techniques from more senior women speaking about the importance of connecting with supervisors might encourage inexperienced women to approach their supervisors more confidently. While the findings from this study suggest that WIL experiences play a role in reducing the gender gap, the long-term goal of WIL practitioners should be to remove this gap from the onset.

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About the Journal

The International Journal of Work-Integrated Learning (IJWIL) publishes double-blind peer-reviewed original research and topical issues related to Work-Integrated Learning (WIL). IJWIL first published in 2000 under the name of Asia-Pacific Journal of Cooperative Education (APJCE).

In this Journal, WIL is defined as " *An educational approach involving three parties – the student, educational institution, and an external stakeholder – consisting of authentic work-focused experiences as an intentional component of the curriculum. Students learn through active engagement in purposeful work tasks, which enable the integration of theory with meaningful practice that is relevant to the students' discipline of study and/or professional development"* (Zegwaard et al., 2023, p. 38*). Examples of practice include off-campus workplace immersion activities such as work placements, internships, practicum, service learning, and cooperative education (co-op), and on-campus activities such as work-related projects/competitions, entrepreneurships, student-led enterprise, student consultancies, etc. WIL is related to, and overlaps with, the fields of experiential learning, work-based learning, and vocational education and training.

The Journal's aim is to enable specialists working in WIL to disseminate research findings and share knowledge to the benefit of institutions, students, WIL practitioners, curricular designers, and researchers. The Journal encourages quality research and explorative critical discussion that leads to the advancement of quality practices, development of further understanding of WIL, and promote further research.

The Journal is financially supported by the Work-Integrated Learning New Zealand (WILNZ; www.wilnz.nz), and the University of Waikato, New Zealand, and receives periodic sponsorship from the Australian Collaborative Education Network (ACEN), University of Waterloo, and the World Association of Cooperative Education (WACE).

Types of Manuscripts Sought by the Journal

Types of manuscripts sought by IJWIL is of two forms: 1) *research publications* describing research into aspects of work-integrated learning and, 2) *topical discussion* articles that review relevant literature and provide critical explorative discussion around a topical issue. The journal will, on occasions, consider good practice submissions.

Research publications should contain; an introduction that describes relevant literature and sets the context of the inquiry. A detailed description and justification for the methodology employed. A description of the research findings - tabulated as appropriate, a discussion of the importance of the findings including their significance to current established literature, implications for practitioners and researchers, whilst remaining mindful of the limitations of the data, and a conclusion preferably including suggestions for further research.

Topical discussion articles should contain a clear statement of the topic or issue under discussion, reference to relevant literature, critical and scholarly discussion on the importance of the issues, critical insights to how to advance the issue further, and implications for other researchers and practitioners.

Good practice and program description papers. On occasions, the Journal seeks manuscripts describing a practice of WIL as an example of good practice, however, only if it presents a particularly unique or innovative practice or was situated in an unusual context. There must be a clear contribution of new knowledge to the established literature. Manuscripts describing what is essentially 'typical', 'common' or 'known' practices will be encouraged to rewrite the focus of the manuscript to a significant educational issue or will be encouraged to publish their work via another avenue that seeks such content.

By negotiation with the Editor-in-Chief, the Journal also accepts a small number of *Book Reviews* of relevant and recently published books.

* Zegwaard, K. E., Pretti, T. J., Rowe, A. D., & Ferns, S. J. (2023). Defining work-integrated learning. In K. E. Zegwaard & T. J. Pretti (Eds.), *The Routledge international handbook of work-integrated learning* (3rd ed., pp. 29-48). Routledge.

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