A comparative study of work-integrated learning experiences: Perceptions and perspectives of engineering and economics students

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Work-integrated learning (WIL) has the capacity to combine academic knowledge with practical experience through specialized programs. While there is extensive literature on WIL, there exists a dearth of research on learners' perspectives, particularly in comparative studies across majors. This study compares the perspectives of 164 engineering students and 172 economics students in Vietnam on WIL. The independent t-test shows both groups recognize WIL's importance for accessing the work environment and improving employability skills. The one-way MANOVA test reveals technical universities offer more diverse and specialized WIL programs, while economics students have limited well-structured WIL opportunities. Mann-Whitney U test results indicate that, in engineering, male students are more aware of WIL's significance for employability. In economics, no significant gender difference exists in WIL perception. The research guides WIL developers in customizing WIL programs based on discipline-specific needs. Additionally, it explores study limitations and suggests potential avenues for future research.

Keywords: Work-integrated learning, engineering students, economics students, higher education, comparative study.

With the evolution of society, the need for top-tier human resources grows more significant. "No hotel can have excellent operations without excellent employees–and that requires excellent human-resources practices" (Enz & Siguaw, 2000, p. 48). High-quality human resources possess a combination of skills, knowledge, competencies, and personal attributes, making them valuable contributors to organizations and society (Haynes & Fryer, 2000). Employability skills encompass effective communication, problem-solving, critical thinking, teamwork, linguistic proficiency, technical acumen, time management, adaptability, leadership, networking, negotiation skills, and more (Al Farisi, 2021; Andrews & Russell, 2012; Venkateswarlu & Prasad, 2012).

Improving human resource quality requires enhancing education (Iswardhana et al., 2022). Currently, only a small portion of students actively acquire employability skills during their university years (Tran, 2015; Tymon, 2013). Universities must change to ensure the majority of students are equipped with workplace-ready skills. The proliferation of universities and colleges, coupled with lax admissions oversight, has led to a mismatch between education and employment, resulting in increased rates of unemployment and underemployment among graduates (Bender & Roche, 2013; Moreau & Leathwood, 2006; Robst, 2007). This hampers their ability to secure employment aligned with their expertise (Etzkowitz, 2003). On the pathway to connecting with the industry to address the job-education mismatch, work-integrated learning (WIL) is one of the strategies adopted by higher education institutions (HEIs) worldwide. WIL is an educational approach that combines academic learning with hands-on work experiences. The objective is to narrow the divide between theoretical knowledge and practical application, enabling students to cultivate the essential skills, industry-specific knowledge, and professional behaviors required for success in their selected fields (Cooper et al., 2010). Although there is a wealth of research on WIL in the literature, stakeholders' perspectives on the role and

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effectiveness of WIL in enhancing the quality of education have not received sufficient attention (Coll et al., 2011).

Vietnamese universities have progressively enhanced their curricula by incorporating practical experiences and aligning with industrial requirements through WIL programs (Tran, 2017). Investigations into WIL have considered the viewpoints of all key stakeholders, who play pivotal roles in every WIL procedure (Abeysekera, 2006; Dwesini, 2017; Nguyen & Dakich, 2022). In particular, the effectiveness of WIL hinges on the students' extent of engagement and their capacity to independently prepare and oversee their learning journey (Tran & Nguyen, 2018). While there exists research on WIL in Vietnam, exploring the perspectives of stakeholders on its importance, implementation, and barriers to development, the majority of studies have primarily examined insights from academics, university and industry leaders, and industrial professionals. There is a notable gap in the literature, as fewer studies have delved into the perspectives and expectations of students regarding WIL (Nguyen & Nguyen, 2022). Furthermore, there hasn't been a singular study that has focused specifically on the viewpoints within two significant sectors of Vietnam's innovation system: engineering and economics.

This paper explores students' perspectives and attitudes towards WIL, comparing engineering and economics students to identify similarities and variations in their views on WIL placements. Given the distinct nature of these fields, tailored WIL programs will naturally differ. A web-based survey gathered insights from 164 engineering and 172 economics students in Vietnamese universities. The research aims to (i) gauge the perceived significance of WIL in enhancing employability skills for economics and engineering students; (ii) compare WIL effectiveness between engineering and economics universities; (iii) discern gender-based differences in awareness of the importance of WIL; and (iv) propose discipline-specific improvement strategies for WIL. This study conducts a comparative analysis of perceptions, viewpoints, and attitudes from two academic disciplines, assessing WIL effectiveness in Vietnam. Unlike previous research focusing on general perspectives, this paper aims to identify discipline-specific differences, aiding developers in crafting targeted strategies for WIL enhancement based on cross-disciplinary insights.

The remainder of this paper explores WIL practices and their significance through a literature review. It synthesizes and analyzes stakeholders' perspectives on WIL delivery in Vietnam. The methodology covers research design, participant recruitment, data collection, and analysis. Results interpret findings from t-test, Mann-Whitney U test, and one-way MANOVA, addressing research questions. Key discoveries from WIL theories and practical implications are discussed before concluding.

WORK-INTEGRATED LEARNING PRACTICES AND THEIR SIGNIFICANCE

In the late 1990s and early 2000s, professionals and researchers broadened their perspectives beyond cooperative education to encompass various forms of work placement programs and on-campus work activities involving external clients (Zegwaard & Pretti, 2023). Concurrently, the term WIL has no precise definition, but gained popularity as an umbrella term to collectively describe various similar practices (Bowen, 2020; Patrick et al., 2008). Patricia (2017) stated that internships, sandwich programs, fieldwork, and cooperative education, collectively known as WIL, represent diverse forms of experience-based education. WIL within higher education encompasses a wide range of on-campus and workplace learning activities and experiences. These activities aim to integrate theoretical knowledge with practical applications in academic learning programs (Billett, 2016; Dorland et al., 2020; Webb & Hayes, 2008). Examples of WIL include work placements that are intertwined with traditional classroom learning (Kramer & Usher, 2012), internships, practicum experiences, project-based learning,

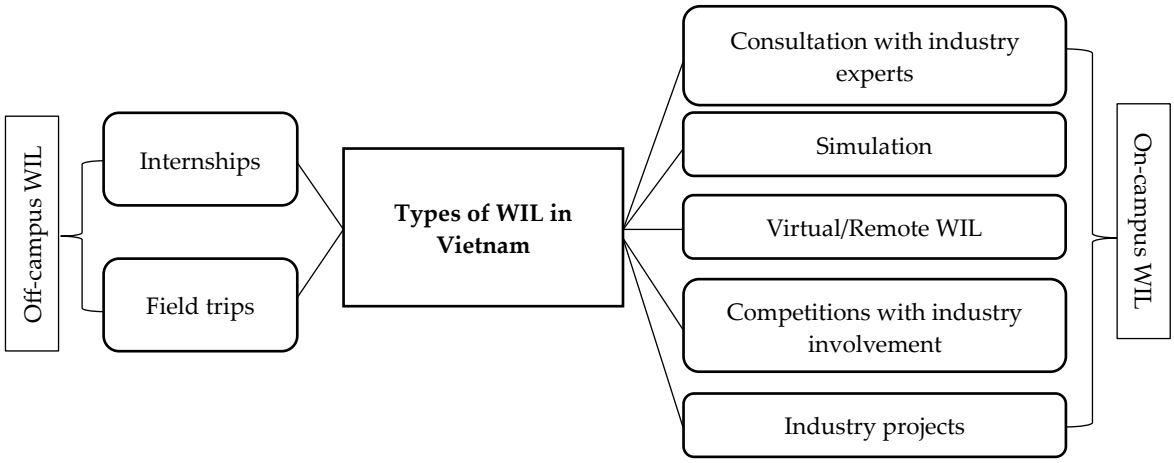
and service-learning (Jackson, 2013). WIL allows students to apply and assess their knowledge through diverse methods and exchange knowledge in the workplace (Billett et al., 2018).

The importance of WIL is widely recognized in national innovation systems. Various WIL delivery methods enable students to collaborate with experienced professionals in their fields and experience genuine workplace environments (Ferns et al., 2014). Dall'Alba (2004) and McKinnon (2013) affirm that WIL bridges theory and practice, enhancing technical expertise. WIL plays a crucial role in nurturing both generic and employability skills, complementing university degrees and preparing students for professional demands (Hoeckel, 2014; Batholmeus & Pop 2017). Rambe's study (2018) found that WIL enhanced students' practical understanding, accelerated skill acquisition, and facilitated skill transfer across contexts. Fleming and Eames (2005) and Tanaka and Carlson (2012) suggest that WIL improves students' grade point averages, research capabilities, critical thinking, and time management. For employers, engaging in WIL enables early recruitment of graduates and fosters university partnerships to enhance corporate image and access specialized resources (Zegwaard & McCurdy, 2014). In a broader context, WIL promotes interaction between universities and the industry (Georgina, 2016).

WORK-INTEGRATED LEARNING IN VIETNAM: INSIGHTS FROM STUDENTS AND GRADUATES

Vietnam has recently emphasized the integration of comparative education and WIL programs into university curricula to enhance students' employability skills. The current focus on student employability has increased attention on WIL. Studies in Vietnam examine two WIL forms: on-campus (involving company speakers, industry expert consultations, simulation activities, online interactions, job-related events, industry competitions, and projects) and off-campus (including internships and field trips) (Khuong, 2016; Nguyen, 2023; Nguyen & Nguyen, 2022; Welch et al., 2012). Additional activities were implemented to prepare for WIL, including guest speakers from companies and job-related events (Nguyen, 2023). Figure 1 is taken from the authors literature analysis and illustrates the current WIL practices in the country.

FIGURE 1: Types of work-integrated learning in Vietnam.

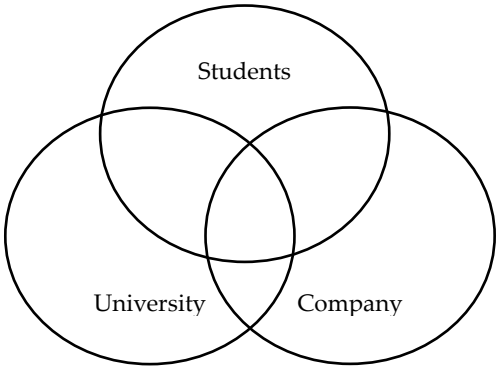


Multiple studies explore stakeholders' perspectives in WIL programs. This section synthesizes literature on students' and graduates' viewpoints regarding WIL practices in Vietnam. WIL in Vietnam is deemed ineffective in several aspects by Bilsland et al. (2019), Khuong (2015), and Nguyen and Nguyen (2022). A significant disparity exists between students' academic knowledge and practical skills expectations in the workplace. For instance, Khuong (2015) found that WIL processes in most tourism programs failed to prepare graduates for employment, especially to meet international tourists' demands. The deficiencies in WIL processes' design, implementation, and assessment stem primarily from the lack of robust connections among stakeholders, including the government, training institutions, companies, and students. Consequently, many graduates struggle to meet enterprise requirements, leading to post-graduation unemployment (Nguyen, 2017). According to Bilsland et al. (2019), internship programs in Vietnamese universities lack formal support structures, as reported by alumni. A significant obstacle in WIL development is students' limited understanding and awareness of higher education and employment (Nguyen & Nguyen, 2022). Many students engage in internship tasks without actively leveraging WIL activities to enhance their employability (Tran, 2018; Tran & Nguyen, 2018). Nguyen et al. (2019) identify the disconnect between students' learning processes and the workplace as a current challenge in Vietnamese higher education, highlighting the need to align educational content with industry practices. The success of WIL largely depends on students' interest levels and their ability to self-prepare and manage their learning autonomously (Nguyen et al., 2022). Tran and Nguyen (2018) suggest that students' engagement and active participation in internship tasks can significantly influence their learning outcomes. However, Vietnamese universities often overlook aligning student needs with industry requirements in WIL preparation and implementation (Khuong, 2016). Students typically secure internships independently, often involving menial tasks such as cleaning, photocopying, typing, and low-wage part-time work, with minimal opportunities for relevant knowledge and skill acquisition in service and production processes. Consequently, reported low student participation in WIL persists (Tran & Nguyen, 2018).

Nevertheless, alongside the negative assessments, there are studies indicating positive evaluations from both students and graduates regarding various aspects of WIL in Vietnam (Nguyen & Nguyen, 2022; Pham & Nguyen, 2022). As an example, alumni perceive internships as transformative learning opportunities, highlighting their importance beyond mere steppingstones to post-graduate employment. Australian and Vietnamese university students collaborated on cross-cultural projects involving the planning, negotiation, and execution of specific initiatives at the Da Nang General Hospital in Vietnam as part of their WIL program (Welch et al., 2012). The feedback from participants reflected a positive reception of the project outcomes. Nguyen and Nguyen's findings (2022) highlighted that students favored employability-focused content in WIL curricula, particularly when it was closely aligned with authentic workplace environments and practices. Additionally, they placed significant value on WIL-related skills, such as communication and presentation abilities. The findings of a study carried out by Pham and Nguyen (2022) indicated that university students placed significant importance on both the preparation for field trips and the support provided by enterprises and the university. They remarked that the field trips were well-organized, as the plans were effectively communicated to the students beforehand.

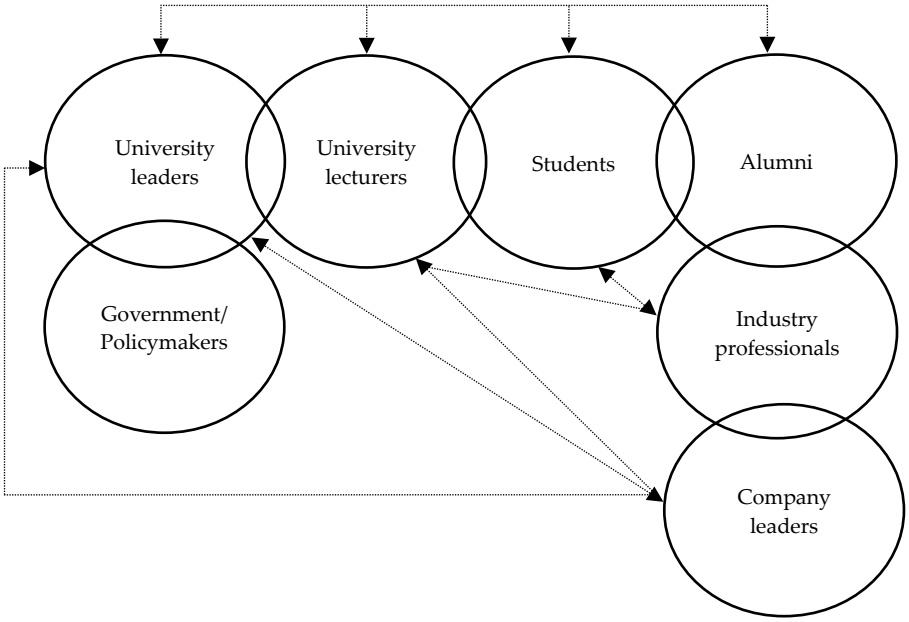
Figure 2a illustrates the conventional intersection among WIL stakeholders, which typically include universities, companies, and students, closely interconnected. This focus on close stakeholder connections is vital for enhancing communication, consistency, shared goals, efficiency, and mutual support, all crucial for WIL program success. A Vietnam-specific diagram, akin to Figure 2b, would underscore a communication deficiency among WIL stakeholders (Khuong, 2016; Tran & Nguyen, 2018).

FIGURE 2a: The conventional intersection among WIL stakeholder environments.



Note. Adapted from "Building a Collaborative Learning Partnership Between the Workplace and the Institution to Enhance Employability," by R. Rajab, (2015), *Proceedings 9th International Conference for Researching Work and Learning*, p. 1005. Copyright 2015 by R. Rajab. Adapted with permission.

FIGURE 2b: Individual bonding relationship of WIL stakeholders in Vietnam.



PERCEPTIONS OF WIL ACROSS ENGINEERING AND ECONOMICS DISCIPLINES

Research on the correlation between WIL programs and disciplinary contexts is limited. One of the key objectives of WIL placements is to develop generic skills among students. Chan and Fong (2018) investigate the perceptions of engineering and business students regarding the importance and competence level of their generic skills. Significant differences were observed in the importance and competency ratings of IT skills, with business students assigning notably higher importance ratings to most generic skills compared to engineering students. Nonetheless, it was noted that irrespective of

discipline, students believed that generic skills are pertinent to their future careers and can be better cultivated through WIL programs.

Back to the context of Vietnam, in Nguyen and Nguyen's study (2022), it's noteworthy that engineering students, being technically oriented, contrast with tourism-hospitality students, who emphasize service. These disciplinary distinctions likely account for variations in the influence of field studies on student preferences in WIL content. Specifically, engineering students prioritize aspects like work safety, teamwork, and attitudes towards managers, crucial for handling project work and technical tasks typical of their field. Conversely, tourism-hospitality students focus on risk management, essential in the demanding and high-pressure service industry.

Disciplinary differences between engineering and economics in Vietnamese higher education regarding WIL can vary significantly (Le & Nguyen, 2019; Pham et al., 2019). In engineering, the focus lies on hands-on technical skills development, often prioritizing industry partnerships and practical application in real-world projects (Le & Nguyen, 2019). Safety standards and compliance are crucial due to the technical nature of the work. Conversely, economics programs emphasize analytical thinking and research methodologies (Pham et al., 2019). WIL experiences may involve analyzing economic trends or working with government agencies. Internships in financial institutions provide practical experience in financial analysis, market research, or policy development. While both disciplines benefit from WIL, engineering emphasizes technical skills and practical applications, while economics focuses on analytical thinking and policy analysis.

HYPOTHESES OF THE STUDY

Considering engineering and business are key to Vietnam's development, they greatly shape educational advancements. Hoang et al. (2023) note that Vietnam's major universities, with their extensive student bodies, focus on fields such as engineering technologies (electronics, electricity, automotive, automation, mechanical engineering, information technology), and business disciplines (business administration, economics management, marketing, commercial trading, financial banking, auditing). Numerous studies reveal a gap between academic training and industry needs (Le et al., 2020; Mai, 2018; Tran, 2016): universities often prioritize theoretical knowledge and basic skills, potentially neglecting to fully equip students for real-world job demands. Employers, meanwhile, seek graduates with not just academic grounding but also practical abilities, experience, and adaptability to workplace dynamics. This discrepancy highlights a significant mismatch between university education and the professional competencies expected by employers. Khuong (2016) and Nguyen (2021) argue that student engagement in placements might suffer from unclear roles, inadequate mentorship, mismatched expectations, or poor academic preparation. Lacking proper support, students may overlook placements' value for employability, missing out on developing key skills and practical experience. The disconnect between universities and industries suggests students struggle to engage in placements that boost employability. Limited literature exists that directly compares the perceptions of WIL among various stakeholder groups. The present study seeks to explore and contrast how two distinct student groups in Vietnam—engineering and economics—view the importance and effectiveness of WIL placements. To examine the insights of the sampled students, the two following null hypotheses for testing were formulated:

H1: There is no significant difference in the perception of engineering students and economics students regarding the significance of WIL in gaining access to the work environment and enhancing employability skills.

The rejection of the hypothesis would suggest a divergence in awareness regarding the significance of WIL between engineering and economics students. The research findings will illuminate whether WIL holds greater importance in the perceptions of engineering or economics students.

H2: There is no significant difference in the effectiveness evaluation of WIL practices organized in engineering and economics universities.

Rating the effectiveness of WIL implementation in each academic discipline is an essential prerequisite and foundational step for universities to align policies with the preferences of students. The rejection of these null hypotheses will provide the foundation for each group of universities to consider, particularly those with more unfavorable evaluations. It will enable them to customize their WIL placements more suitably, aligning with the preferences of students and meeting industry requirements.

Gender dynamics significantly influence WIL experiences, despite a consistent male-to-female participant ratio. Literature has explored gender differences in various WIL and employment aspects. Hou (2018) found gender disparities in students' internship expectations, potentially leading to disappointment during their internships. For many female employees, identifying social relations at work is beneficial, contributing to significant gender differences in job expectations and satisfaction levels, as indicated by Bender et al. (2005) and Okpara et al. (2005). However, Nadjla and Hasan (2009) identified cases where males reported higher job satisfaction when their expectations aligned with their experiences. Hall et al. (2013) reported no significant gender differences in how mentors rated interns' abilities, but female interns rated their own abilities lower in analytical thinking, computational skills, computer skills, and technical skills compared to male peers.

Rampersad and Zivotic-Kukoji's study (2018) suggests that women tend to assess their social communication skills more positively than men, revealing a gendered pattern in skill evaluation. Furthermore, according to Nguyen and Nguyen's findings (2022), male interns experience increased stress when dealing with technical challenges and machinery, contrasting with the experiences of their female counterparts. No research has been identified within Vietnamese academia that investigates the impact of gender disparities on the perception, implementation, and experience of WIL. In light of these insights, the study aims to examine the impact of gender differences across various training disciplines on students' perceptions of the importance of WIL. Thus, the following hypothesis was formulated:

H3: There is no significant difference in perceiving the importance of WIL delivery between male and female students from the two training disciplines.

The distribution of male and female students significantly impacts the performance outcomes of universities in two prominent academic disciplines. This is evident as the engineering sector tends to have a higher proportion of male students, while the economics training sector attracts a larger number of female students. These auxiliary hypotheses aid in examining the variations in the perceived significance of WIL among male and female students within each respective training discipline.

H3a: There is no significant difference in perceiving the importance of WIL delivery between male and female engineering students.

H3b: There is no significant difference in perceiving the importance of WIL delivery between male and female economics students.

Rejecting this hypothesis would assist educators, policymakers, and industry professionals in adjusting WIL placements that align with gender considerations. These adjustments may include factors such as the level of exertion, the ability to utilize flexibility in communication, and finding the appropriate balance between in-factory work and indoor tasks, among others.

METHODOLOGY

Research Design

The current research thoroughly examines and compares the views of engineering and economics students on their WIL experiences. The goal is to pinpoint effective strategies for tailoring WIL programs to each discipline's specific needs, thereby enhancing overall WIL practices and boosting student employability. The insights from final-year students are valuable for WIL developers, especially those involved in developing and implementing initiatives in Vietnam and similar socio-economic contexts globally.

The viewpoints and evaluations of the advantages and disadvantages of WIL activities currently being carried out at universities in Vietnam are explored in depth. A comparative analysis was conducted to discern similarities and differences in the implementation effectiveness of WIL in engineering and economics disciplines. The study aimed to investigate whether WIL is more effective when organized in engineering or economics and whether gender has any impact on perceived WIL performance. The study encourages the engagement of university students in a web-based questionnaire, designed to address the following research questions:

RQ1. Is there a difference in the perception of engineering students and economics students regarding the significance of WIL in gaining access to the work environment and enhancing employability skills?

RQ2. Are WIL practices deemed more effective in universities specializing in engineering or economics?

RQ3. Do male and female students in engineering and economics disciplines perceive the importance of WIL differently?

The research significantly contributes to academia by thoroughly exploring student perceptions in diverse WIL programs. A satisfaction survey gauged their contentment and assessed WIL quality at universities. Additionally, a comparative analysis mitigated potential over-evaluation in engineering and economics in Vietnam. These findings enable stakeholders to propose discipline-specific WIL program designs, enhancing employability skills for the evolving work environment.

Participant Recruitment

This study aims to compare the perspectives of engineering and economics students on WIL programs in Vietnamese universities. Using a site-based sampling approach (Arcury & Quandt, 1999), universities in Hanoi offering programs in these disciplines were identified. A purposive respondent-driven sampling (RDS) technique was then employed (Lavrakas, 2008) based on personal academic connections. Initially, a lecturer from one university was contacted and referrals for individuals in charge of industry cooperation at other universities were requested. This process continued until no new participants were suggested. Communication occurred via email and internet-based calls. Ultimately, four leading universities in Hanoi focusing on engineering and economics training were selected (see Table 1). Each university has a gatekeeper identified through the RDS process. Despite

the limited number of sites, these universities are renowned for their specialized training in technical engineering, business, and economics.

TABLE 1: Demographics of research sites.

No.	University	Training discipline
1	Hanoi University of Science and Technology (HUST)	Engineering
2	Hanoi University of Industry (HaUI)	Engineering
3	National Economics University (NEU)	Economics
4	Foreign Trade University (FTU)	Economics

The survey respondent recruitment process consistently utilized a site-based sampling approach. Gatekeepers, who have direct access to students, facilitated the distribution of the questionnaire link to all final-year students in their respective universities. Purposive sampling was employed to select respondents who were likely to offer relevant and insightful information about their WIL experiences (Kelly, 2010; Palinkas et al., 2015). As the majority of WIL activities were primarily carried out for final-year students during their university tenure, they were specifically invited to participate in the questionnaire to provide the most authentic and comprehensive perspectives on WIL practices.

A total of 336 students, including 164 engineering students ($N_1 = 164$) and 172 economics students ($N_2 = 172$), participated by responding to the questionnaire. Table 2 displays the demographic details of the respondents in the survey. To mitigate risks to participants, this study strictly adhered to the university's ethical guidelines. The corresponding author obtained a certificate upon completion of the mandatory Research Ethics and Compliance Training program mandated by the university, a prerequisite for all research fund recipients. Additionally, Written Pledge No. 2023-0037 issued by the Japan Society for the Promotion of Science on May 18, 2023, was also obtained. As ethics approval is not mandated by the University, the research aims and objectives were thoroughly explained to participants, and written informed consent was obtained from all students involved. The corresponding author confirms adherence to protocols safeguarding the rights and privacy of all participants throughout the research process.

TABLE 2: Demographics of survey participants.

University	N	%	Training discipline	N	%
HUST	70	20.83	Global ICT	17	5.06
HaUI	94	27.98	Mechanical engineering	57	16.96
NEU	79	23.51	Computer technology	21	6.25
FTU	93	27.68	Electrical and electronic engineering	19	5.65
Gender	**N**	**%**	Automobile engineering technology	13	3.87
Male	188	55.95	Commercial business	12	3.57
Female	148	44.05	Business administration	13	3.87
Training discipline	**N**	**%**	Accounting and auditing	29	8.63
Electronics - Telecommunications	13	3.87	Hotel management	50	14.88
Control engineering - Automation	13	3.87	Economics	44	13.10
Electrical engineering	11	3.27	Marketing	24	7.14

Method

This study utilized an online questionnaire, benefiting from widespread internet access, for efficient data collection (Wellman, 2004). Due to limited direct access to students, necessitating gatekeeper assistance, a web-based questionnaire was deemed most suitable. Other methods like telephone or

face-to-face surveys were not feasible due to the large participant pool despite all sampled universities being in Hanoi.

The research took place from November 2023 to January 2024. Initially, a pilot of the questionnaire was administered to a limited number of the authors' acquaintances for feedback (Brace, 2018; Jenn, 2006). A consistent open-web survey to explore the viewpoints of two student cohorts was employed. The Google form survey, encompassing three question formats—closed-ended, open-ended, and Likert-scale questions—was administered from May 2023 to July 2023 (Acharya, 2010; Brace, 2018,). To uphold participant integrity, anonymity and voluntary participation were ensured. The survey consisted of three sections: the first gathered demographic information, the second assessed the importance of WIL in enhancing employability skills for job readiness, and the final section involved respondents rating the effectiveness of WIL programs based on their practical experiences. Evaluation questions were presented as five-point Likert scale items, ranging from one to five, indicating levels of agreement or importance, reflecting participants' real-life experiences throughout their university years (Brace, 2018).

Analysis

All data was generated using SPSS statistical software version 29. Initially, the data's internal consistency reliability was verified. For Likert-type scales, computing Cronbach's alpha coefficient is essential to assess this (Croasmun & Ostrom, 2011; Cronbach, 1951). Likert-scale questions gauging sampled students' perspectives on WIL quality yielded a Cronbach's alpha of 0.878, indicating satisfactory questionnaire validity (Bland & Altman, 1997).

This study utilized the independent samples t-test, one-way MANOVA, and Mann-Whitney U test (Chen & Liu, 2020; Duffy & Orlandi, 2008). Vieira (2016) states t-test is statistically acceptable for Likert scales when the population isn't normally distributed. One-way MANOVA tests the null hypothesis of equal mean vectors across groups (Todorov & Filzmoser, 2010), assessing differences among independent groups regarding categorical independent variables and continuous dependent variables. The Mann-Whitney test, with Normal approximation and ties correction, guards against Type I errors for two-group Likert items (Rasch et al., 2007).

RESULTS

Graduating Students Perception of WIL's Significance in Accessing the Work Environment and Improving Employability Skills

The initial research question explored whether there existed a disparity in how engineering and economics students perceived the importance of WIL in accessing the work environment and improving employability skills. Based on the gathered responses, the existing WIL programs in their universities encompass both on-campus and off-campus components. Respondents have noted that, alongside specialized knowledge and language proficiency, the following skills, considered crucial for future employment, would have been enhanced through WIL (see Table 3 for details). Both engineering and economics students consider WIL to be highly important for accessing future employment opportunities and improving their employability skills.

TABLE 3: Work-integrated learning programs and key work-integrated learning enhanced skills.

On-campus WIL	Off-campus WIL	Key WIL-enhanced skills
• Company speakers and lecturers • Technology, product, and service seminars • Job fairs • Competitions.	• Internships • Field trips.	• Problem-solving • Teamwork • Communication • Time management • Organizational skills • Information retrieval capabilities • Digital literacy.

To address the first research question, the independent t-test method for the analysis of the gathered data was used. Table 4 displays the statistical test results. The mean score of perceived significance for gaining access to the work environment through WIL among engineering students is 3.50 on a 5-point scale, whereas for economics students, it is 3.30. Consequently, the mean values for the significance perception of WIL in enhancing employability skills are 3.54 for engineering students and 3.36 for economics students. The independent samples test indicated that both engineering students (SD = 1.359) and economics students (SD = 1.306) recognize the importance of WIL in accessing the work environment. Similarly, when it comes to the significance of WIL in improving employability skills, there is no discernible difference in their recognition, with SD of 1.340 for engineering students and 1.256 for economics students. The perception of the importance of WIL does not significantly differ between the two student groups, with p-values of 0.163 and 0.200, respectively ($p > 0.001$). Therefore, the test outcome retains the null hypothesis H1, indicating that there is no noteworthy difference in the perception of WIL's significance for accessing the work environment and enhancing employability skills between engineering students and economics students. Accordingly, the mean and standard deviation values indicate that both groups of students highly value the importance of WIL in shaping their paths to prospective employment.

TABLE 4: Group statistics of independent samples t-test.

	Student group	N	Mean	Std. Deviation
Significance of WIL in gaining access to work environment	Engineering students	164	3.50	1.359
	Economics students	172	3.30	1.306
Significance of WIL in enhancing employability skills	Engineering students	164	3.54	1.340
	Economics students	172	3.36	1.256

Perspectives on the Effectiveness of Work-Integrated Learning Delivery

The second research question sought to investigate the viewpoints of two distinct student cohorts regarding the efficacy of WIL practices within Vietnamese universities. The findings indicated that technical universities provide a broader array of specialized WIL programs. Engineering students express greater satisfaction with their WIL experiences compared to their counterparts in economics, whereas economics students encounter fewer well-structured WIL opportunities.

Utilizing one-way Multivariate Analysis of Variance (MANOVA), the perspectives and ratings of engineering and economics students concerning the effectiveness of WIL placements were computed and compared. Categorical independent variables with two distinct groups: engineering students and

economics students were examined. Six key components, measured via a 5-point Likert scale, were employed to evaluate the delivery of WIL. The multivariate tests section yielded the actual results of the one-way MANOVA. As shown in Table 5, the p-values for all student evaluation components are <0.001, indicating significant differences in WIL effectiveness assessments between the engineering and economics student groups. Consequently, the null hypothesis H2 that the mean vectors across the considered groups are equal based on the test results, was rejected.

TABLE 5: Multivariate tests.

Effect		**Significance**
Intercept	Pillai's Trace	<.001
	Wilks' Lambda	<.001
	Hotelling's Trace	<.001
	Roy's Largest Root	<.001
Student group	Pillai's Trace	<.001
	Wilks' Lambda	<.001
	Hotelling's Trace	<.001
	Roy's Largest Root	<.001

Table 6 presents the means for the six dependent variables, representing different attitudinal items. These scores are segregated based on the independent variable, distinguishing between engineering students and economics students. It is evident from the table that the mean scores of engineering students surpass those of economics students across all items (Diversity of WIL: 3.66 > 2.88, Frequency of WIL: 3.43 > 2.36, Relevance with training discipline: 2.71 > 2.08, Structural organization of WIL: 3.46 > 2.55, Overall evaluation on WIL's effectiveness: 3.32 > 2.46, and Satisfaction with WIL: 3.29 > 2.38).

TABLE 6: Descriptive statistics of work-integrated learning evaluation components.

	Student group	**Mean**	**Std. Deviation**	**N**
Diversity of WIL	Engineering students	3.66	1.000	164
	Economics students	2.88	.925	172
	Total	3.26	1.037	336
Frequency of WIL	Engineering students	3.43	.991	164
	Economics students	2.36	.822	172
	Total	2.88	1.053	336
Relevance with training discipline	Engineering students	2.71	.912	164
	Economics students	2.08	.701	172
	Total	2.39	.870	336
Structural organization of WIL	Engineering students	3.46	.955	164
	Economics students	2.55	.926	172
	Total	2.99	1.042	336
Overall evaluation on WIL's effectiveness	Engineering students	3.32	.995	164
	Economics students	2.46	.760	172
	Total	2.88	.980	336
Satisfaction with WIL	Engineering students	3.29	.997	164
	Economics students	2.38	.759	172
	Total	2.82	.993	336

The delivery of WIL in technical universities is characterized by greater diversity, frequency, relevance to training majors, structure, effectiveness, and satisfaction, as per the perspectives of engineering

students revealed through the test. In contrast, WIL practices in economics universities are deemed less qualified. Four out of six attitudinal items scored below 2.5, indicating a negative attitude among economics students towards the implementation process and effectiveness of WIL placements (Wanjohi & Syokau, 2021).

Out of the six attitudinal items, the relevance between WIL practices and the training majors exhibited the lowest mean values (M1 = 2.71, M2 = 2.08). This suggests that, from the viewpoint of students, a significant number of WIL programs have been implemented without careful consideration of their alignment with the students' training majors.

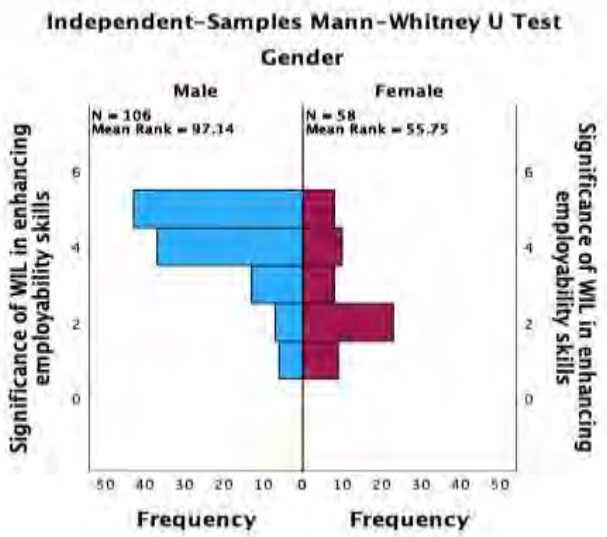
Male and Female Engineering and Economics Students Perceptions of the Significance of WIL

The third research question was posed to assess whether there is a gender-based difference in the perception of WIL's importance between engineering and economics students. The results for this question indicated that male students in engineering demonstrate a higher awareness of the importance of WIL for employability. However, in economics, there is no significant gender difference in WIL perception.

The independent samples Mann-Whitney U test was employed to ascertain if there are statistical variances in the means between male and female students within each training discipline regarding their views on the significance of WIL in enhancing employability skills. Initially, the first test to examine the disparity in the perception of WIL's significance between male and female engineering students was conducted. In this section, the supporting hypothesis H3a, which posits that the distributions of perceptions regarding the importance of WIL for enhancing employability are identical for both groups (male and female engineering students) is examined. The results of the test reject H3a, which means that there is a statistical difference in the perception between male and female engineering students regarding WIL's significance in enhancing their employability skills. The other two independent samples Mann-Whitney U test confirmed the appropriateness of the initial test, with asymptotic significance (2-tailed) p-value < 0.001.

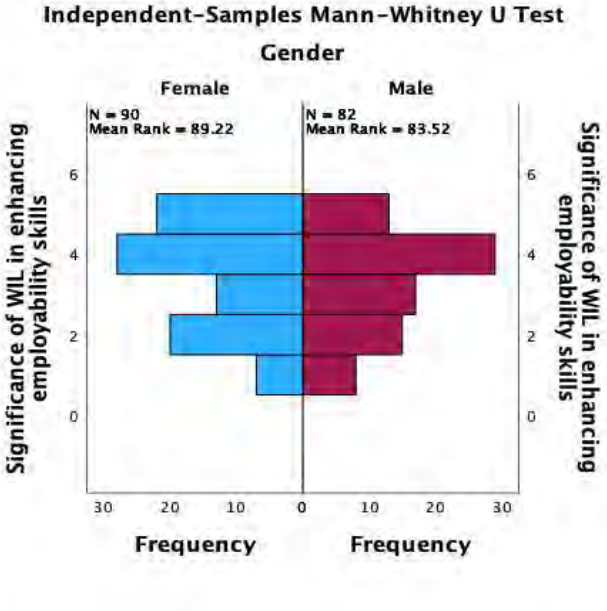
The test also yielded results indicating the mean rank (MR) and sum of ranks for the two groups under scrutiny: male and female engineering students. The MR for the perception of WIL's significance among 106 male students is 97.14, surpassing the MR of 58 female students, which stands at 55.75 (refer to Figure 3). From these findings, it can be inferred that male engineering students demonstrate a significantly greater awareness of the importance of WIL for advancing their employability.

FIGURE 3: Difference in perception of WIL significance between male and female engineering students.



The second Mann-Whitney U Test was run to determine if the supporting hypothesis H3b (there is an identical distribution between male and female economics students in perceiving the importance of WIL in enhancing their employability) is correct. In this instance, the test outcomes support H2b, indicating a p-value of 0.440. MR for 90 female students is 89.22, while the MR for 82 male students is 83.52. It can be concluded that there is no significant difference in the perception of WIL's importance between male and female economics students (see Figure 4 for visualization of the test).

FIGURE 4: Consensus in recognizing significance of WIL across male and female economics students.



DISCUSSION AND IMPLICATIONS

Despite the constrained sample size, the study highlights variations in perceptions, perspectives, and attitudes between two distinct groups of students from leading universities in Vietnam regarding their encounters with WIL practices. The study findings reveal that both sampled groups of students recognize the importance of WIL in gaining access to the workplace and improving employability skills. WIL placements, including both on-campus and off-campus experiences, exhibit greater diversity and specialization in technical universities. In contrast, students in economics encounter fewer opportunities for comprehensive or well-structured WIL activities. Within the engineering discipline, male students demonstrate a higher awareness of WIL's significance for advancing employability. Conversely, in the field of economics, there is no notable difference in how male and female students perceive the importance of WIL.

The significance of WIL in nurturing the development of employability skills and readying students for the challenges of the professional realm has been acknowledged in extensive literature (Dall'Alba, 2004; Ferns et al., 2014; Fleming & Eames, 2005). Previous studies have also investigated students' perceptions of their WIL experiences (Bayerlein & Jeske, 2018; McKenna et al., 2001). Comparing the perspectives of two cohorts of students from four top universities contributes to understanding the current state of WIL implementation in Vietnam, and to discerning any disparities between the engineering and economic training sectors in carrying out WIL. The examination of findings has revealed that in higher education in Vietnam, the majority of university students recognize the importance of WIL in enhancing employability skills and gaining access to the working environment, as well as preparing for the world of work. The results of the initial research question contribute to the overall findings of numerous prior studies, underscoring the prevalent acknowledgment among a majority of university students regarding the significance of WIL for their future careers. This discovery aligns with Illeris's learning model (2011), which posits that workplace learning occurs when students engage in real work tasks and are immersed in technical, organizational, and socio-cultural learning environments within the workplace. Martin and Rees (2019) suggest that the incorporation of WIL enriched students' experiences by fostering enjoyment, achievement, and bolstering their career decisions. According to Jackson (2013), there was a notable enhancement in undergraduates' perceived proficiency across all essential employability skills after undergoing WIL placements. Additionally, WIL has been seen as a factor that enhances employment prospects for students during their placement (Blackwell et al., 2001). WIL is widely acknowledged as a powerful platform for cultivating a diverse range of skills, encompassing both general and professional competencies. This approach offers students a valuable chance to elevate their preparedness for employment and the demands of the workplace (Patrick et al., 2008). Moalosi et al.'s findings (2021) indicate that WIL facilitates experiential learning for students, fostering the development of essential personal and professional attributes crucial for securing employment and thriving in a professional setting. Tran and Nguyen (2018) posit that, as perceived by students, internships play a crucial role in solidifying their current knowledge and skills, fostering the enhancement of pertinent professional skills, influencing their career trajectories, and altering their attitudes and behaviors towards learning.

Technical universities provide a broader range of specialized WIL programs compared to economics students, who have fewer well-structured WIL opportunities. Consequently, engineering students tend to express higher satisfaction with WIL than their counterparts in economics. This finding supports the conclusion drawn in Nguyen and Nguyen's study (2022) that engineering students prioritize elements such as work safety, teamwork, and attitudes towards managers, which are essential for managing project work and technical tasks characteristic of their field. There is a scarcity of literature comparing

the perspectives of engineering and economics students on WIL delivery. Existing studies have focused on exploring the perspectives of either engineering students (Karim et al., 2019; Male & King, 2019; Mutereko & Wedekind, 2016; Reddan & Rauchle, 2012) or economics students (Gribble et al., 2015; Spowart, 2006). The finding related to research question 2 corroborates the conclusion by Karim et al. (2019), demonstrating a high level of satisfaction and engagement among engineering students in project-based learning. Students self-reported increased levels of confidence and enhanced ability to apply theoretical knowledge during this WIL program. Engineering training primarily focuses on imparting practical skills related to mechanical equipment. Consequently, the WIL activities conducted thus far predominantly emphasize hands-on skills. The majority of internships for engineering students are with technically oriented companies, where students often work directly with machines. This direct engagement with machinery stands as the primary driver behind engineering students' satisfaction with WIL placements. Male and King (2019) investigated the learning outcomes of engineering students through industry placements and other workplace-based activities, highlighting gains in motivation, confidence, and the development of professional competency. This finding contradicts the conclusion drawn by Mutereko and Wedekind (2016), those who advocated for a new HE engineering training program without internship placements. Their findings suggested that internships do not effectively prepare graduates for work, as employers often use this form of WIL primarily to obtain cheap labor. Limited research has been conducted on the viewpoints of economics students regarding WIL. The results from the second research question align with the conclusion by Gribble et al. (2015), which identifies low participation rates in WIL placements for undergraduate students from business and accounting disciplines. This is attributed to the necessity for students to independently secure their placements due to resource constraints within the university. However, this finding contradicts Spowart's (2006) concluding remarks, which highlighted the overwhelmingly positive attitude of Hospitality Management students towards WIL placements.

Gender distribution is a key factor that impacts placements in WIL. While the general male-to-female ratio remains stable among study participants, there is a notable contrast in the perception of WIL, particularly within the engineering sector. In engineering, male workers predominantly hold positions that involve manual labor and advanced technical responsibilities, whereas their female counterparts often work indoors. In the economics discipline, which tends to prioritize generic skills over practical ones, both male and female students assign higher importance to generic skills compared to engineering students. The finding contributes to the research conducted by Rampersad and Zivotic-Kukoji in 2018, indicating that women frequently assess their social communication skills more favorably compared to their male counterparts. The results also back the assertion made by Nguyen and Nguyen (2022) that male interns commonly experience greater work-related pressure associated with technical aspects and machinery compared to their female counterparts. This finding further reinforces Bowen's conclusion (2019) that potential gender bias within WIL organizations, such as internship placements, is intricate and manifests through an underlying bias in considerations of gender, women, and work, as evidenced by institutional structures. The present study not only affirms the conclusions drawn in several preceding studies but also brings to light that male engineering students exhibit a greater awareness of the significance of WIL compared to their female peers. However, in the field of economics, no disparity was found in the perception of the importance of WIL between male and female students.

The complete procedure, starting from the selection of students as research participants, examining their perspectives on WIL, to analyzing research findings and proposing practical implications, is consistent with Astin's theory of student involvement (1984). This theory clarifies the perception of positive outcomes for HEIs concerning the transformative effects on students when they participate in

co-curricular activities. A key aspect of the theory revolves around the students' environment, encompassing all the experiences they encounter during their college journey. In the present study, we delved into students' experiences arising from their involvement in WIL activities. The quality of these experiences, whether positive or negative, plays a crucial role in shaping their academic performance and outcomes, consequently influencing the overall outcomes of the university. The research is also grounded in a learner-centered approach, facilitating the modification of training programs based on the perspectives and ratings provided by students (Brush & Saye, 2000). Within the array of factors influencing the success of student-centered activities, two crucial aspects emphasized in the interpretation of the objectives and findings of the current research are student collaboration and the mechanisms ensuring student accountability. As the skills cultivated in career management programs are highly personal and reflective, students should participate in various activities, encompassing project-based programs and WIL placements (Watts, 2006).

Upon examination of the research findings, Vietnamese universities should prioritize student engagement, particularly in WIL and extracurricular activities. Considering and incorporating students' perspectives can mitigate shortcomings and enhance overall outcomes. Conducting a comparative analysis of engineering and economics students' views, attitudes, and experiences regarding WIL placements enables developers to design more effective WIL programs within university-industry partnerships tailored to each specific training discipline. The heightened awareness among students regarding the significance of WIL is a positive indicator for universities and overall human resource development. In engineering institutions, gender emerges as a notable influencing factor in WIL implementation. It is crucial to design and implement WIL programs that better align with the physical conditions and characteristics of female students. This adaptation should encompass adjustments in training content, task assignments, and work safety measures in internship or project-based learning programs. For economics universities, there is value in creating additional WIL activities and expanding their typology, scope, scale, and organizational frequency. WIL developers should actively flexibly revise implementation approaches, taking into account student demographics such as gender and the specific characteristics of chosen training disciplines.

One significant constraint of the current study lies in its exclusive reliance on students' perspectives and ratings. Subsequent research could enhance its scope by incorporating the viewpoints of various WIL stakeholders, thus diversifying the sample size and measurement scales. In terms of research sites, scholars may broaden their investigation by including a greater number of sites, leading to more comprehensive insights and analysis. Future research could also extend its focus by examining students' perspectives on WIL in countries with comparable national development situations.

CONCLUSION

In summary, the present study investigated and compared the perceptions, perspectives, and attitudes of engineering and economics students regarding their involvement in WIL activities facilitated through university-industry collaborations. Employing an exploratory quantitative approach, the research unveiled that both groups of students recognize the importance of WIL in enhancing their employability skills and preparing for the workforce. Notably, male engineering students exhibit a greater awareness of the significance of WIL compared to their female counterparts. Furthermore, the study found that engineering students tend to overestimate the quality and effectiveness of WIL practices organized within their universities. In contrast, WIL activities in economics universities are perceived as lacking in diversity, comprehensiveness, and well-structured frameworks. The practical

implications of these findings are crucial for WIL developers, emphasizing the need to tailor and implement WIL activities based on students' demographics and their chosen industry sectors.

ACKNOWLEDGEMENTS

This research constitutes a component of the corresponding author's doctoral dissertation. We gratefully acknowledge the support provided by a Research Subsidy from Ritsumeikan Asia Pacific University (Oita, Japan). We express our sincere gratitude to all the students who participated voluntarily in this research. A special acknowledgment is owed to Ms. Hoa Nguyen Quynh for her invaluable advice and support, as well as to the gatekeepers of universities who facilitated the distribution of surveys to student participants.

REFERENCES

Abeysekera, I. (2006). Issues relating to designing a work-integrated learning program in an undergraduate accounting degree program and its implications for the curriculum. *Asia-Pacific Journal of Cooperative Education*, *7*(1), 7–15.

Acharya, B. (2010). *Questionnaire design*. Centre for Post-graduate Studies, Nepal Engineering College.

Al Farisi, Y. (2021). Improving the quality of human resources in Madrasah. *Managere: Indonesian Journal of Educational Management*, *3*(2), 192-201. https://doi.org/10.52627/ijeam.v3i2.156

Andrews, G., & Russell, M. (2012). Employability skills development: strategy, evaluation and impact. *Higher Education, Skills and Work-Based Learning*, *2*(1), 33–44. https://doi.org/10.1108/20423891211197721

Arcury, T., & Quandt, S. (1999). Participant recruitment for qualitative research: A site-based approach to community research in complex societies. *Human Organization*, *58*(2), 128–133. https://doi.org/10.17730/humo.58.2.t5g838w7u1761868

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25*(4), 297-308.

Batholmeus, P., & Pop, C. (2017). The significance of work-integrated learning in enhancing employability: Perceptions of Namibian English graduates. In K. E. Zegwaard & M. Ford (Eds.), *Refereed Proceedings of the 20th WACE World Conference on Cooperative and Work-Integrated Education* (pp. 11–21). WACE.

Bayerlein, L., & Jeske, D. (2018). Student learning opportunities in traditional and computer-mediated internships. *Education + Training*, *60*(1), 27–38. https://doi.org/10.1108/ET-10-2016-0157

Bender, K. A., Donohue, S. M., & Heywood, J. S. (2005). Job satisfaction and gender segregation. *Oxford Economic Papers*, *57*(3), 479–496. https://doi.org/10.1093/oep/gpi015

Bender, K. A., & Roche, K. (2013). Educational mismatch and self-employment. *Economics of Education Review*, *34*, 85–95. https://doi.org/10.1016/j.econedurev.2013.01.010

Billett, S. (2016). Apprenticeship as a mode of learning and model of education. *Education + Training*, *58*(6), 613–628. https://doi.org/10.1108/ET-01-2016-0001

Billett, S., Cain, M., & Le, A. H. (2018). Augmenting higher education students' work experiences: Preferred purposes and processes. *Studies in Higher Education*, *43*(7), 1279–1294. https://doi.org/10.1080/03075079.2016.1250073

Bilsland, C., Carter, L., & Wood, L. N. (2019). Work integrated learning internships in transnational education. *Education + Training*, *61*(3), 359–373. https://doi.org/10.1108/ET-07-2017-0094

Blackwell, A., Bowes, L., Harvey, L., Hesketh, A., & Knight, P. (2001). Transforming work experience in higher education. *British Educational Research Journal*, *27*(3), 269–285. https://doi.org/10.1080/01411920120048304

Bland, J. M., & Altman, D. G. (1997). Statistics notes: Cronbach's alpha. *BMJ*, *314*(7080), 572–572. https://doi.org/10.1136/bmj.314.7080.572

Bowen, T. (2019). Examining students' perspectives on gender bias in their work-integrated learning placements. *Higher Education Research & Development*, *39*(3), 411–424. https://doi.org/10.1080/07294360.2019.1677568

Bowen, T. (2020). Work-integrated learning placements and remote working: Experiential learning online. *International Journal of Work-Integrated Learning*, *21*(4), 377–386.

Brace, I. (2018). *Questionnaire design: How to plan, structure and write survey material for effective market research* (4th ed.). Kogan Page.

Brush, T., & Saye, J. (2000). Implementation and evaluation of a student-centered learning unit: A case study. *Educational Technology Research and Development*, *48*(3), 79–100. https://doi.org/10.1007/BF02319859

Chan, C. K. Y., & Fong, E. T. Y. (2018). Disciplinary differences and implications for the development of generic skills: A study of engineering and business students' perceptions of generic skills. *European Journal of Engineering Education*, *43*(6), 927–949. https://doi.org/10.1080/03043797.2018.1462766

Chen, L., & Liu, L. (2020). Methods to analyze Likert-type data in educational technology research. *Journal of Educational Technology Development and Exchange (JETDE)*, *13*(2), 39–60. https://doi.org/10.18785/jetde.1302.04

Coll, R., Eames, C., Paku, L. K., Lay, M., Hodges, D., & Martin, A. (2011). An exploration of the pedagogies employed to integrate knowledge in work-integrated learning. *The Journal of Cooperative Education and Internships*, *43*, 14–35.
Cooper, L., Orrell, J., & Bowden, M. (2010). *Work integrated learning: A guide to effective practice*. Routledge.
Croasmun, J. T., & Ostrom, L. (2011). Using Likert-type scales in the social sciences. *Journal of Adult Education*, *40*(1), 19–22.
Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, *16*, 297–324. https://doi.org/10.1007/BF02310555
Dall'Alba, G. (2004). Understanding professional practice: Investigations before and after an educational programme1. *Studies in Higher Education*, *29*(6), 679–692. https://doi.org/10.1080/0307507042000287195
Dorland, A., Finch, D. J., Levallet, N., Raby, S., Ross, S., & Swiston, A. (2020). An entrepreneurial view of universal work-integrated learning. *Education + Training*, *62*(4), 393–411. https://doi.org/10.1108/ET-11-2019-0260
Duffy, A., & Orlandi, A. (2008). A review of statistical methods for comparing two data sets. *Applied Computational Electromagnetics Society Journal*, *23*(1), 90–97.
Dwesini, N. F. (2017). The role of work-integrated learning in enhancing employability skills: Graduate perspectives. *African Journal of Hospitality, Tourism and Leisure*, *6*(2), 1-9.
Enz, C. A., & Siguaw, J. A. (2000). Best practices in human resources. *Cornell Hospitality Qurterly, 41*(1), 48–61. https://doi.org/10.1177/001088040004100123
Etzkowitz, H. (2003). Innovation in innovation: The triple helix of university-industry-government relations. *Social Science Information*, *42*(3), 293–337. https://doi.org/10.1177/05390184030423002
Ferns, S., Campbell, M., & Zegwaard, K. E. (2014). Work integrated learning. In S. Ferns (Ed.), *Work integrated learning in the curriculum* (pp. 1–6). HERDSA.
Fleming, J., & Eames, C. (2005). Student learning in relation to the structure of the cooperative experience. *Asia-Pacific Journal of Cooperative Education*, *6*(2), 26–31.
Georgina, A. (2016). *Work-based learning and work-integrated learning: Fostering engagement with employers*. National Centre for Vocational Education.
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
Hall, C. W., Pinelli, T. E., & Brush, K. M. (2013, June 23-26). *Female and male interns and their mentors' perception of workforce skill development* [Paper presentation]. The 120th Annual Conference & Exposition! of the American Society for Engineering Education (ASEE), Atlanta, GA, United States.
Haynes, P., & Fryer, G. (2000). Human resources, service quality and performance: A case study. *International Journal of Contemporary Hospitality Management*, *12*(4), 240–248. https://doi.org/10.1108/09596110010330813
Hoang, H. N., Nguyen, T. T. H., Pham, T. P. H., Ngo, T. P., & Nguyen, T. T. (2023). The development of curricular and training programs in Vietnam. *Problems of Education in the 21st Century*, *81*(1), 90–116.
Hoeckel, K. (2014). Youth labour markets in the early twenty-first century. In A. Mann, J. Stanley, & L. Archer. (Eds.), *Understanding employer engagement in education: Theories and evidence* (pp. 66–76). Routledge.
Hou, Y.-A. (2018). Avoiding the gap of college students' internship expectations and perceptions—A case study in Taiwan. *Open Journal of Nursing*, *8*(8), 531–551. https://doi.org/10.4236/ojn.2018.88040
Illeris, K. (2011). Workplaces and learning. In M. Malloch, M. L. Cairns, K. Evan, & B. N. O'Connor (Eds.), *The SAGE handbook of workplace learning* (pp. 32–46). Sage Publications.
Iswardhana, M. R., Winanti, P. S., & Nurhayati, R. T. (2022). Promoting education and training as efforts to improve human resources in African developing countries. *Qalamuna: Journal Pendidikan, Sosial, Dan Agama*, *14*(2), 767–782. https://doi.org/10.37680/qalamuna.v14i2.3698
Jackson, D. (2013). The contribution of work-integrated learning to undergraduate employability skill outcomes. *Asia-Pacific Journal of Cooperative Education*, *14*(2), 99–115.
Jenn, N. C. (2006). Designing a questionnaire. *Malaysian Family Physician*, *1*(1), 32–35.
Karim, A., Campbell, M., & Hasan, M. (2019). A new method of integrating project-based and work-integrated learning in postgraduate engineering study. *The Curriculum Journal*, *31*(1), 157–173. https://doi.org/10.1080/09585176.2019.1659839
Kelly, S. (2010). Qualitative interviewing techniques and styles. In I. Bourgeault, R. Dingwall, & R. de Vries (Eds.), *The Sage handbook of qualitative methods in health research* (pp. 307–326). Sage Publications.
Khuong, C. (2016). Work-integrated learning process in tourism training programs in Vietnam: Voices of education and industry. *Asia-Pacific Journal of Cooperative Education, 17*(2), 149–161.
Khuong, C. T. H. (2015). *Internationalising tourism education in Vietnam: An evaluation of the work-integrated learning process in tourism training programs*. [Doctoral dissertation, RMIT University]. RMIT research repository. https://researchrepository.rmit.edu.au/esploro/outputs/9921861961701341
Kramer, M., & Usher, A. (2012). *Work-integrated learning and career-ready students: Examining the evidence*. Higher Eduaction Strategy Associates.
Lavrakas, P. (2008). *Encyclopedia of survey research methods*. Sage Publications. https://doi.org/10.4135/9781412963947
Le, H. H., & Nguyen, D. T. (2019). University–industry linkages in promoting technology transfer: A study of Vietnamese

technical and engineering universities. *Science, Technology and Society*, *24*(1), 73–100. https://doi.org/10.1177/0971721818821796

Le, Q. T. T., Doan, T. H. D., Nguyen, Q. L. H. T. T., & Nguyen, D. T. P. (2020). Competency gap in the labor market: Evidence from Vietnam. *The Journal of Asian Finance, Economics and Business*, *7*(9), 697–706. https://doi.org/10.13106/jafeb.2020.vol7.no9.697

Mai, T. Q. L. (2018). Skill gap from employers' evaluation: A case of VNU graduates. *VNU Journal of Science: Education Research*, *34*(2). https://doi.org/10.25073/2588-1159/vnuer.4137

Male, S. A., & King, R. (2019). Enhancing learning outcomes from industry engagement in Australian engineering education. *Journal of Teaching and Learning for Graduate Employability*, *10*(1), 101–117.

Martin, A. J., & Rees, M. (2019). Student insights: The added value of work-integrated learning. *International Journal of Work-Integrated Learning*, *20*(2), 189–199.

McKenna, K., Scholtes, A., Fleming, J., & Gilbert, J. (2001). The journey through an undergraduate occupational therapy course: Does it change students' attitudes, perceptions and career plans? *Australian Occupational Therapy Journal*, *48*(4), 157–169. https://doi.org/10.1046/j.1440-1630.2001.00248.x

McKinnon, S. (2013). A mismatch of expectations? An exploration of international students' perceptions of employability skills and work-related learning. In J. Ryan (Ed.), *Cross-cultural teaching and learning for home and international students* (pp. 211–224). Routledge.

Moalosi, R., Letsholo, P., Matake, B., & Ollyn, M. (2021). Enhancing graduate attributes through work- integrated learning: Students' perspective. *International Journal of Educational Development in Africa*, *6*(1).

Moreau, M., & Leathwood, C. (2006). Graduates' employment and the discourse of employability: A critical analysis. *Journal of Education and Work*, *19*(4), 305–324. https://doi.org/10.1080/13639080600867083

Mutereko, S., & Wedekind, V. (2016). Work integrated learning for engineering qualifications: A spanner in the works? *Journal of Education and Work*, *29*(8), 902–921. https://doi.org/10.1080/13639080.2015.1102211

Nadjla, H., & Hasan, A. R. (2009). Gender differences and job satisfaction of the Iranian public librarians. *Journal of Education and Psychology*, *16*, 91–112.

Nguyen, Q. H. (2017). Work-integrated learning curriculum: An effective design to enhance graduate employment rate in Vietnam. *Tạp Chí Khoa Học và Công Nghệ Đại Học Đà Nẵng*, *12*(121), 58–62. https://jst-ud.vn/jst-ud/article/view/36

Nguyen, T. (2021). The involvement of industry professionals and barriers to involvement in work-integrated learning: The case of the profession-oriented higher education framework in Vietnam. *Journal of Education and Work*, *35*(1), 92–107. https://doi.org/10.1080/13639080.2021.2018408

Nguyen, T., & Nguyen, V. (2022). Enhancing student employability: A mixed-methods study into work-integrated learning curricula in Vietnamese universities. *International Journal of Work-Integrated Learning*, *23*(3), 405–425.

Nguyen, T. N. H. (2023). Implementation of on-campus work-integrated learning activities in Vietnamese universities: 'Don't rely on lecturers'. *Journal of Further and Higher Education*, 47(8), 1124–1139. https://doi.org/10.1080/0309877X.2023.2217648

Nguyen, T. N. H., & Dakich, E. (2022). Student internship experiences: areas for improvement and student choices of internship practices. *Education + Training*, *64*(4), 516–532. https://doi.org/10.1108/ET-09-2021-0337

Nguyen, T. N. H., Dakich, E., & Grieshaber, S. (2022). Factors influencing the participation of industry professionals in work-integrated learning in Vietnamese universities: A qualitative approach. *Higher Education, Skills and Work-Based Learning*, *12*(3), 574–587. https://doi.org/10.1108/HESWBL-03-2021-0042

Nguyen, V. N. B., Nguyen, H. T. H., & Phan, T. (2019). The education system and cooperative and work-integrated education system in Vietnam: An overview. In Y. Tanaka & K. Zegwaard (Eds.), *Cooperative and work-integrated education in Asia: History, present and future issues* (pp. 83–104). Routledge.

Okpara, J. O., Squillace, M., & Erondu, E. A. (2005). Gender differences and job satisfaction: A study of university teachers in the United States. *Women in Management Review*, *20*(3), 177–190. https://doi.org/10.1108/09649420510591852

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, *42*(5), 533–544. https://doi.org/10.1007/s10488-013-0528-y

Patricia, M. R. (2017). Toward a model of work experience in work-integrated learning. In T. Bowen & M. T. B. Drysdale (Eds.), *Work-integrated learning in the 21st century: Global perspectives on the future* (pp. 41–68). Emerald Publishing.

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

Pham, D. L., & Nguyen, T. N. (2022). Students' evaluation on field trips as a means to prepare graduate employability at a Vietnamese university. *Humanities and Social Sciences Letters*, *10*(2), 198–212. https://doi.org/10.18488/73.v10i2.3011

Pham, T. T. T., Bui, T. T., Nguyen, T. T. T., & Hoang, T. H. (2019). Thúc đẩy hoạt động liên kết giữa nhà trường và doanh nghiệp - Trường hợp nghiên cứu tại trường Đại học Kinh tế, Đại học Huế [Promoting linkage activities between schools and enterprises - Case study at University of Economics, Hue University]. *Hue University Journal of Science: Economics and Development*, *128*(5A). https://doi.org/10.26459/hueuni-jed.v128i5A.5224

Rajab, R. (2015).Building a collaborative learning partnership between the workplace and the institution to enhance

employability. Proceedings 9th International Conference for Researching Work and Learning, 1005.
Rambe, P. (2018). Using work integrated learning programmes as a strategy to broaden academic and workplace competencies. *Journal of Human Resource Management*, *16*(1), 1-16.
Rampersad, G., & Zivotic-Kukoji, V. (2018). Work-integrated learning in science, technology, engineering and mathematics: Drivers of innovation for students. *International Journal of Work-Integrated Learning*, *19*(2), 193–204.
Rasch, D., Teuscher, F., & Guiard, V. (2007). How robust are tests for two independent samples? *Journal of Statistical Planning and Inference*, *137*(8), 2706–2720. https://doi.org/10.1016/j.jspi.2006.04.011
Reddan, G., & Rauchle, M. (2012). Student perceptions of the value of career development learning to a work-integrated learning course in exercise science. *Australian Journal of Career Development*, *21*(1), 38–48. https://doi.org/10.1177/103841621202100106
Robst, J. (2007). Education and job match: The relatedness of college major and work. *Economics of Education Review*, *26*(4), 397–407. https://doi.org/10.1016/j.econedurev.2006.08.003
Spowart, J. (2006). Hotel school students' views of their preparation for work-integrated learning: An exploratory study. *Asia-Pacific Journal of Cooperative Education*, *7*(2), 10-15.
Tanaka, Y., & Carlson, K. (2012). An international comparison of the effect of work-integrated learning on academic performance: A statistical evaluation of WIL in Japan and Hong Kong. *Asia-Pacific Journal of Cooperative Education*, *13*(2), 77–88.
Todorov, V., & Filzmoser, P. (2010). Robust statistic for the one-way MANOVA. *Computational Statistics & Data Analysis*, *54*(1), 37–48. https://doi.org/10.1016/j.csda.2009.08.015
Tran, L., & Nguyen, T. (2018). Internship-related learning outcomes and their influential factors. *Education + Training*, *60*(1), 69–81. https://doi.org/10.1108/ET-02-2017-0030
Tran, L. H. N. (2017). External stakeholders' roles and factors influencing their participation in developing generic skills for students in Vietnamese universities. *Journal of Education and Work*, *31*(1), 72–86. https://doi.org/10.1080/13639080.2017.1386774
Tran, L. H. N. (2018). Game of blames: Higher education stakeholders' perceptions of causes of Vietnamese graduates' skills gap. *International Journal of Educational Development*, *62*, 302–312. https://doi.org/10.1016/j.ijedudev.2018.07.005
Tran, T. T. (2015). Is graduate employability the 'whole-of-higher-education-issue'? *Journal of Education and Work*, *28*(3), 207–227. https://doi.org/10.1080/13639080.2014.900167
Tran, T. T. (2016). Building a close connection between higher education and industry for a better education outcome for Vietnam. *VNU Journal of Science: Education Research*, *32*(4).
Tymon, A. (2013). The student perspective on employability. *Studies in Higher Education*, *38*(6), 841–856. https://doi.org/10.1080/03075079.2011.604408
Venkateswarlu, K., & Prasad, P. V. (2012). A review on employability skills. *IOSR Journal of Humanities and Social Science*, *2*(5), 32–34.
Vieira, P. C. (2016). T-test with Likert scale variables. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2770035
Wanjohi, A. M., & Syokau, P. (2021). *How to conduct Likert scale analysis.* Kenya Projects Organization. https://www.kenpro.org/how-to-conduct-likert-scale-analysis/
Watts, A. G. (2006). *Career development learning and employability*. Higher Education Academy.
Webb, R., & Hayes, J. (2008). Work integrated learning: Will it work for spatial science wilers? In K. McDougall (Ed.), *Proceedings of the Queensland Spatial Conference 2008: Global warming: What's happening in paradise?* (pp. 1–7). Spatial Sciences Institute.
Welch, B., Vo-Tran, H., Pittayachawan, S., & Reynolds, S. (2012). Crossing borders: Evaluating a work integrated learning project involving Australian and Vietnamese students. *Australian Academic and Research Libraries*, *43*(2), 120–134. https://doi.org/10.1080/00048623.2012.10722265
Wellman, B. (2004). The three ages of internet studies: Ten, five and zero years ago. *New Media & Society*, *6*(1), 123–129. https://doi.org/10.1177/1461444804040633
Zegwaard, K. E., & McCurdy, S. (2014). The influence of work-integrated learning on motivation to undertake graduate studies. *Asia-Pacific Journal of Cooperative Education*, *15*(1), 13–28.
Zegwaard, K. E., & Pretti, T. J. (2023). Contemporary challenges and diverse practices of work-integrated learning in higher education. In K. E. Zegwaard & T. J. Pretti (Eds.), *The Routledge international of work-integrated learning* (pp. 3-12). Routledge.