reconnect
Reconnecting relationships through technology

Designing Effective Work-Integrated Learning for Data Science Students: Considerations and Lessons Learned

Antonette Shibani and Adrian Buck
University of Technology Sydney

Work integrated learning (WIL) equips students with real-world experiences by bridging the worlds of academia and work, theory and practice, reflection and action. Through WIL, students are able to gain critical life skills such as teamwork, problem-solving, communication, and professionalism, which are key for employability (Freudenberg et al., 2011; Jackson, 2015). They also get to apply the knowledge gained from classroom learning to practical projects, preparing themselves for the workforce. With the increasing demand for job-ready graduates, WIL remains a strategic priority for many higher education providers calling for significant investment in curriculum design (Billett, 2014).

Along with the noted benefits, the challenges and factors that require careful consideration for successful WIL design are well established (Jackson, 2015). Past studies have examined approaches and best practices for effective WIL, with more recent work focusing on technology and connectivity in a post-pandemic era (Dean & Campbell, 2020; Schuster & Glavas, 2017). In particular, the foundation lies in strong partnerships between higher education and industry, which is responsive to the needs of all stakeholders (Choy & Delahaye, 2011; Smith & Betts, 2000).

In our presentation, we discuss the considerations and lessons learned by educators in delivering a WIL subject for data science students in an Australian higher educational institution. Here, the underlying technicality of the subject involving data sharing and access, confidentiality, and intellectual property rights adds to contextual challenges. Additional challenges include the need to design a valuable student experience which can be scaled up for larger cohorts. The design of project-based learning experiences requires domain expertise, personalized mentorship, and pre-defined outcomes, prompting the shift towards a more problem-based approach where outcome spaces can evolve for transdisciplinary learning (Kligyte et al., 2021).

We derive insights from designing an interdisciplinary space for WIL projects with particular focus on the perspectives of different stakeholders involved and managing their expectations and boundaries. This involves co-defining shared problem spaces for projects to create a common understanding across all stakeholders (Billett, 2015); to inform more appropriately aligned authentic assessments (Ajjawi et al., 2020) that are embedded in project work; guiding, supporting and managing team formation and group dynamics to empower students to work as autonomous groups (Brewer et al., 2020); and the use of relevant tools and platforms to facilitate operations and aid learning (Schuster & Glavas, 2017). Feedback from students and industry partners has improved significantly across a 3 year period, with the current subject offerings receiving the highest student and industry satisfaction scores to date.

The work contributes to the design of effective WIL by learning from practical experiences of educators before, during, and following the pivot to online learning due to the COVID-19 pandemic, with lessons transferrable to other WIL contexts. Future work will build on the findings by triangulating with additional data sources including student work.

Keywords: WIL, Work integrated learning, data science, employability, higher education, transdisciplinary

References

Ajjawi, R., Tai, J., Huu Nghia, T. L., Boud, D., Johnson, L., & Patrick, C.-J. (2020). Aligning assessment with the needs of work-integrated learning: The challenges of authentic assessment in a complex context. *Assessment & Evaluation in Higher Education*, *45*(2), 304-316. https://doi.org/10.1080/02602938.2019.1639613

Billett, S. (2014). Integrating learning experiences across tertiary education and practice settings: A socio-personal account. *Educational Research Review*, *12*, 1-13. https://doi.org/10.1016/j.edurev.2014.01.002

Billett, S. (2015). *Integrating practice-based experiences into higher education*. Springer. https://doi.org/10.1007/978-94-017-7230-3_1

Brewer, M., Ferns, S., Lewis, S., Childers, J., & Russell, L. (2020). Interdisciplinary project-based work-integrated learning: The Australian good practice guide. *Australian Technology Network*.

Choy, S., & Delahaye, B. (2011). Partnerships between universities and workplaces: some challenges for work-integrated learning. *Studies in Continuing Education*, *33*(2), 157-172. https://doi.org/10.1080/0158037x.2010.546079

Dean, B. A., & Campbell, M. (2020). Reshaping work-integrated learning in a post-COVID-19 world of work. *International Journal of Work-Integrated Learning*, *21*(4), 355-364.

Freudenberg, B., Brimble, M., & Cameron, C. (2011). WIL and generic skill development: The development of business students' generic skills through work-integrated learning. *Asia-Pacific Journal of cooperative education*, *12*(2), 79-93.

Jackson, D. (2015). Employability skill development in work-integrated learning: Barriers and best practice. *Studies in higher education*, *40*(2), 350-367. https://doi.org/10.1080/03075079.2013.842221

Kligyte, G., Van der Bijl-Brouwer, M., Leslie, J., Key, T., Hooper, B., & Salazar, E. (2021). A Partnership Outcome Spaces framework for purposeful student–staff partnerships. *Teaching in Higher Education*, 1-19. https://doi.org/10.1080/13562517.2021.1940924

Schuster, L., & Glavas, C. (2017). Exploring the dimensions of electronic work integrated learning (eWIL). *Educational Research Review*, *21*, 55-66. https://doi.org/10.1016/j.edurev.2017.04.001

Smith, R., & Betts, M. (2000). Learning as partners: Realising the potential of work-based learning. *Journal of Vocational education and Training*, *52*(4), 589-604. https://doi.org/10.1080/13636820000200147

Shibani, A. & Buck, A. (2022, December 4-7). *Designing Effective Work-Integrated Learning for Data Science Students: Considerations and Lessons Learned* [Pecha Kucha Presentation]. 39th International Conference on Innovation, Practice and Research in the Use of Educational Technologies in Tertiary Education, ASCILITE 2022, Sydney, NSW, Australia. https://doi.org/10.14742/apubs.2022.135