
WIL'25

INTERNATIONAL CONFERENCE
ON WORK-INTEGRATED LEARNING

22-24 September 2025
Kristiania University of Applied Sciences
Oslo, Norway

PROCEEDINGS OF WIL'25

The 3rd International Conference of Work-Integrated Learning
“Shaping the Future Landscape of Work-Integrated Learning”

ISBN 978-91-89969-29-2



Editors

Prof. Kristina Areskoug Josefsson, University West

Prof. Per Assmo, University West

Prof. Ulrika Lundh Snis, University West

Associate Prof. Anna Karin Olsson, University West

Prof. Per Lauvås, Kristiania University of Applied Sciences

Associate Prof. Andreas Thon, Kristiania University of Applied Sciences

Editorial to WIL'25 Proceedings:

“Shaping the future landscape of Work-Integrated Learning”

Work-integrated learning (WIL) has long been recognized as a vital pedagogical approach that bridges the gap between academic theories and real-world practice. Traditionally, this model revolves around three primary actors: the student, the workplace, and the educational institution.

In an era marked by rapid technological advancements, shifting economic paradigms, and pressing global challenges such as sustainability, WIL must evolve from a confined pedagogical tool into a vibrant, more nuanced, multidimensional research field essential for shaping the future landscape of WIL. Such a shift demands a focus on working life relations and learning—recognizing that learning does not occur in isolation or solely within traditional educational settings. Instead, it is deeply embedded in diverse social contexts and professional practices, necessitating a broader exploration of how knowledge, competence, and skills are developed, transformed, and transferred across various sectors and social spheres.

The proposed shaping of WIL underscores the importance of integrating insights from social sciences and humanities, positioning it as a transdisciplinary arena that critically analyzes the complex relationship between work and learning. This approach expands the concept of work beyond conventional paid employment to include a variety of social and organizational contexts—volunteer work, community engagement, informal apprenticeship, and inter-professional collaborations. Similarly, learning transcends the classroom, encompassing processes of knowledge and skills development within and across professions, in organizational change, and within societal development. Addressing these complexities requires a concerted effort to shape the future of WIL.

The WIL25 conference invited scholars, practitioners, and policymakers to co-create innovative solutions, ensuring that WIL remains relevant and effective amidst the complexities of the 21st century. The WIL25 proceedings include paper contributions with diverse research methodologies that critically examine the conditions, challenges, and solutions related to integrating work and learning. Themes like *Innovation, digitalization, societal and worklife transitions, Student learning and educational design* and, *Professional learning in working life*, all contributed the proceeding publication.

We hope that this contribution will spur the shaping the future landscape of WIL and offer an opportunity to fundamentally enhance our understanding of work and learning. By doing so, WIL can transcend its traditional boundaries and become a catalyst for societal renewal, professional adaptation, and lifelong learning in an uncertain and dynamic world.

The editors

All papers published in these proceedings were presented at the 3rd International Conference of Work-Integrated Learning, 2025 and were peer reviewed and refereed by the scientific board.

Scientific Committee

Prof. Kristina Kristina Areskoug Josefsson, University West

Prof. Per Assmo, University West

Prof. Ulrika Lundh Snis, University West

Associate Prof. Anna Karin Olsson, University West

Prof. Per Lauvås, Kristiania University of Applied Sciences

Associate Prof. Andreas Thon, Kristiania University of Applied Sciences

Review Board

Thanks to all reviewers who independently double peer reviewed the papers:

Ada Svarstad Solberg
Andreas Thon
Anna Karin Olsson
Anne Katrine Folkman
Antoine Pennaforte
Camilla Gjellebæk
Camilla Sanna
Camilla Seidl
Carina Nyvoll
Charlotte Arkenback
Christian M Ostlund
David Stjern
Deandra Christopher
Deodat Mwesiumo
Ellen Kulset
Francois Lambotte
Fredrik Hillberg Jarl
Fredrik Sunnemark
Gerrit Muller
Hanne Stavelie

Hans Erik Næss
Haytham B Ali
Helena Vallo Hult
Ingvil Lid Schow
Irene Bernhard
Jamal Mohammed
Attaya Safi
Jarle Bastesen
Jeanette Duplessis
Karl Dahlquist
Kristina A Josefsson
Laurence Piper
Laurent Moccozet
Lena Sjöberg
Liesel Massyn
Linnéa Carlsson
Maria Hedelius
Mona Solvoll
Monika Hattinger
Olav Johansen

Ole Petter Vestheim
Per Assmo
Per Lauvås
Roan Slabbert
Rolando Gonzalez
Sabina Dalsborn
Sabri Derinöz
Sandra Ebojoh
Sandra Jederud
Stephen Billett
Sunniva Myhre
Trond Beldo Klausen
Ulrika Lundh Snis
Veronica Isaksen
Ville Björck
Wanda Presthus
Yumna Ali
Åshild Mongstad

Table of contents

Tracks, paper title, authors	Page	Tracks, paper title, authors	Page
The future of WIL - Innovation, Digitalization, Societal and Worklife Transition	6	Work-integrated Learning and Problem-Based Learning: Exploring Complementary Pathways to Graduate Employability <i>Trond Beldo Klausen and Andreas Thon</i>	190
Students' Perceived Importance of LinkedIn for Future Career Opportunities <i>Cafina Johansen Nyvoll and Lars Erik Braum</i>	7	Institutional Success Factors for Work-Integrated Learning in Norwegian Higher Education: Insights from Provosts of Education <i>Andreas Thon and Boghild Brekke Hauglid</i>	196
Digital Skills Passport: Certification and export of student skills using Open Badges for higher education <i>Pattara Lasing, Patrick Roth and Laurent Moccozet</i>	15	Studying Learning in the Wild: Reflections on WIL research methodologies <i>Linnéa Carlsson, Åshild Lockert and Sandra Samuelsen</i>	202
Developing soft skills for the global workplace in a Blended Intensive Programme (BIP) <i>Hanne Stavelie</i>	20	Work-integrated Learning within the bachelor's program in pedagogy <i>Leine Birgit Vaala, Adina Maria Nydahl and Sorniva Myhre</i>	206
Uncovering the potential of WIL as a lens for the resource orchestration framework in driving organizational learning and innovation <i>Maria Heidehus</i>	25	From Monodisciplinary to Interdisciplinary Learning: A Case Study in the Norwegian Bachelor's Engineering Program by Introducing Systems Engineering Fundamentals <i>Jamal Sali, Haytham B. Ali and Gemt Muller</i>	210
Inclusive Futures: A Practice-Based Model for Embedding Accessibility Across the WIL Landscape <i>Deandra Christopher</i>	30	Bringing Theory and Practice: Student Reflections on a Case-Based HRM Learning Approach in Higher Education <i>Rune Berke and Åshild Mongstad</i>	216
Digitising Work-Integrated Learning Administration at a University of Technology <i>Loikka Kruger</i>	41	Micro-placement: Adapting Work-Integrated Learning for Online Students <i>Ella Marie Heyerdahl, Evelina Svensson and Ulrike Lilsberg</i>	224
Industrial and academic co-production using a work-integrated learning model for student project work <i>David Spem, Mikael Ericsson and Kristina Eriksson</i>	43	Reinventing Masters' Theses as Work-Integrated Learning: A Multi-Stakeholder Approach from French-Speaking Belgium <i>Sabir Demoz, François Lambotte, Ingrid Rincin and Anne-Catherine Frevost</i>	230
From Standalone Projects to Strategic Partnerships: A Three-Year Case Study of Academia-Industry Collaboration Evolution <i>Jarle Basten, Karl Mette Solheim and Silje Wiig-Abbas</i>	58	Work-Integrated Learning: Internship as a Study Program Developer <i>Annette Kallevig</i>	234
Phronesis as connecting democratic citizenship and work-integrated learning <i>Kari Dahlquist and Laurence Piper</i>	63	The role of work-integrated learning in the curriculum of higher education in spatial planning in Norway <i>Pavel Grabalov and Mima Di Matino</i>	239
From research to impact - A Work-Integrated Learning approach <i>Linnéa Carlsson and Camilla Gjellebak</i>	67	Making Work-Integrated Learning Work: The Placement Provider's Story in Early Childhood Education <i>Julie Prendegast</i>	244
From Efficiency to Empowerment: Generative AI as a Catalyst for Pedagogical Renewal in Higher Education <i>Charlotta Arkenback, Andreas Stenberg and Ajia Kosbanen</i>	71	Developing thesis competencies through a work-based project that integrates technical communication studies and subject studies - case of Håne University of Applied Sciences' Electrical and Automation Engineering Program <i>Lea Mustonen and Susan Heikkilä</i>	249
Can WIL be the key to increase SPR competence in nursing education? <i>Aida Sæviðsdóttir</i>	75	Towards Work-Integrated Learning: Enhancing Education Through Simulation Games <i>Dagvid Edward Mævsrum, Runi Tomter Hansen and Marius Lingsæth</i>	253
The Manufacturing Industry's Voyage of Discovery to Industry 5.0: A Transdisciplinary Industrial Work-Integrated Learning Research Approach <i>Anna Karin Oksa, Kristina Eriksson and Oskar Tengblad</i>	79		
The relevance of social work in the workforce - potential for innovation in welfare services? <i>Anne Kaitine Folkman, Evelyn Sandøy Otteren and Heidi Lie Erikson</i>	84	Professional Learning in Working Life	268
		Exploring work-integrated education in an open-access online course for professionals: Problematic and harmful sexual behavior and disabilities <i>Wenche Fjeld, Geir Hilde Lund and Kristina Aeskoug-Josefsen</i>	269
Student Learning and Educational Design in WIL & WIE	96	Integrating Learning and Health: Associations between Perceived Learning Potential of the Workplace and Health among Diabetes Specialist Nurses <i>Alma Dautovic</i>	274
Mind the Gap: How Portfolios Help Students Believe in and Communicate Their Skills <i>Cafina Johansen Nyvoll and Ingrid Lid Schow</i>	97	Learning for work in academia by doing Work-Integrated Learning in PhD education <i>Kristina Aeskoug-Josefsen, Fredrik Sunnevik, Elisabeth Næver, Alma Dautovic, Linda Febring, Ksenija Peggare and Daniel Masterson</i>	279
Mentoring program - An activity for enhanced work-integrated learning in Human Resources education programs? <i>Annika Eklund, Jennie Ryding and Camilla Solfr</i>	102	Uncovering Barriers to Work-Integrated Learning in the Swedish IT Sector: A Study of Employer Attitudes and Practices <i>Fredrik Hillberg Jarl</i>	284
Development of graduate attributes in work-integrated learning through pre-exposure to peer-assisted learning <i>Rohan Stabbert</i>	106	Developing the International Mobility of co-op students: Impacts (Barriers and Benefits) for Host Organizations <i>Antoine Pinnafort</i>	289
Researching and evaluating work-integrated learning: purposes, methods and procedures <i>Stephen Billiet</i>	112	Rethinking Teaching Expertise: A Conceptual Shift for Work-Integrated Learning <i>Olivia Serbin</i>	294
Peer-assisted learning strategy to enhance student competency and success during clinical training <i>Jeanette Dupuis and Rohan Stabbert</i>	116	We don't need no education: exploring physicians' dual information seeking behaviors through the lens of work-integrated learning (WIL) <i>Jonas Pettersen, Helena Vallo Hult, Laurence Piper and Per Weikell</i>	298
An Overview of Student Jobs and Work-Integrated Learning Types in Information Technology in one Higher Education Institution in Norway <i>Wanda Preshus and Rolando Gonzalez</i>	120	Solving the conundrum of leadership development through WIL - reflections on developing leaders already in leadership positions <i>Anna Karin Oksa and Cecilie Mæssgå</i>	303
Exploring the Impact of Swedish Teacher Education on Professional Development <i>Sandra Jøntved</i>	125	Making Sense of Generative Artificial Intelligence in the Workplace <i>Nathalie Ostergård, Kathi Högberg and Ulrike Lundh Snis</i>	308
Identifying Learning Outcomes in Project-Based Work-Integrated Learning: A Text Analysis of Student Reflections <i>Adina Maria Nydahl and Boghild Brekke Hauglid</i>	131	Work-Integrated Learning in Contemporary Work: Leadership and Learning in Hybrid Workplaces <i>Sandra Edojof</i>	311
Interdisciplinary Bachelor's Program in Social Psychiatric Care: An Example of Work-Integrated Learning and Professional Development <i>Sabrina Dalsbom</i>	135	Active Learning: Classroom as a Catalyst for Collegial Learning in a WIL Context <i>Erik Malmström and Anna Jakobson</i>	316
Student Self-Regulation in WIL: A Study of Institutional and Workplace Structured Support Frameworks <i>Andreas Thon, Birthe Kjellord Lange and Merete Bølstad</i>	140	Learning for Working with Research and Sustainability: The "VIPAWIL" Model <i>Ulrike Lundh Snis, Laurence Piper, Wilma Westin Lundqvist, and Hanne Smitt Skjærgård</i>	321
Fostering (critical) reflection and reflective practice skills in a Norwegian work-integrated accounting and auditing master's degree <i>Ellen Kulset and Kjetil Magne Baksaas</i>	146	Assessing the need for and developing an ethical competence module in a WIL course <i>Forrest Bølstad, Rosemarie Matha Berglund and Ole Eivind Kvikvik Waiay</i>	327
The Story of Going from Work-Integrated Learning to Work-Integrated Education - Contextualizing Policy in Practice <i>Ulrike Lundh Snis, Kristina Aeskoug-Josefsen, Sandra Pennbrant and Lena Åberg</i>	152	Designing Learning Environments for Working Professionals: Insights from Work-Integrated Learning (WIL) Research <i>Christian Madsen Østlund, Victoria Johansen, Kristina Johansson, Anna Johansen, Zakarias Mortensen and Helena Vallo Hult</i>	332
Additional Practice as Work-Integrated Learning in Teacher Education <i>Mina Rokne Bye, Ole Petter Vesheim, Veronica Isaksen and Silje Dybdahl</i>	157	Exploring the Dynamics of Learning-Intensive Situations in Contemporary Working Life: Implications for Organizational Innovation, Knowledge Management, and Work-Integrated Education <i>Olav Johansen and Aurim Gustavsen</i>	336
Bringing Academia and Industry in bachelor's and Master thesis Projects: Opportunities and Challenges <i>Mona Solvoll, Sarah Joy Lyons-Kokkin and Petter Braathen</i>	167		
What can WIL learn from citizenship education? The ambiguous space of insider understanding and outsider objectivity <i>Laurence Piper and Karl Dahlquist</i>	178		
Work-Integrated Learning Approach in Medical Trainees - Interplay of Team Leader Effectiveness, Meta-Cognition and Innovativeness <i>Yumna Ali, Syed Mubashir Iqbal Shah</i>	181		

*Winner of the Best Paper Award

Example of citing a paper from these proceedings (APA 7th ed. style):
 Johansen Nyvoll, C., & Braum, L. E. (2025). Students' Perceived Importance of LinkedIn for Future Career Opportunities. In K. Aeskoug-Josefsen et al., P. Asmo, U. Lundh Snis, A. K. Oksa, P. Lauås, & A. Thon (Eds.), *Refereed Proceedings of the 3rd WIL International Conference on Work-Integrated Learning, 2025, Kristiania University of Applied Science* (pp.7-14). University West

EMPIRICAL VALIDATION OF THE DART MODEL IN UNIVERSITY-BUSINESS COLLABORATION: WE WORKING AND ENVISIONING CO-CREATION COMMUNITY OF PRACTICE

Pedro Rodrigues¹, Cláudia S. Costa², Inês Barbedo², Fernando Pereira³, Juliana Almeida-de-Souza⁴, Bárbara Barroso³, Celeste Antão³, Rebeca Lachovicz⁴, Vera Ferro-Lebres⁴

1. *LiveWell, Polytechnic Institute of Bragança, Bragança, Portugal*
2. *CITeD, Polytechnic Institute of Bragança, Bragança, Portugal*
3. *Polytechnic Institute of Bragança, Bragança, Portugal*
4. *CIMO, LA SusTEC, Polytechnic Institute of Bragança, Bragança, Portugal*
pedror@ipb.pt

INTRODUCTION

Higher Education faces significant challenges, including internationalization (Msomphora, 2025), digital transformation - in particular the integration of artificial intelligence (AI) into traditional methods and cybersecurity (Parambil *et al.*, 2024), students increasing expectations (Amanzhol *et al.*, 2024), pressure for higher alumni employability rates (Schueller, 2023), the increased need of interdisciplinary approaches and for active faculty involvement in fostering sustainability education (Abo-Khalil, 2024). Higher education institutions (HEIs) are rethinking how they design learning experiences and engage with stakeholders (Gill and Singh, 2020). One of the most promising approaches in this scenario is Work-Integrated Learning (WIL) (Jackson and Dean, 2023), particularly the value co-creation methodologies, where learners, educators, and external partners actively collaborate in the production of educational experiences and innovations (Schmied *et al.*, 2024). Analyzing HEI considering the Service-Dominant Logic (Vargo and Lusch, 2004), co-creation shifts the traditional paradigm of education delivery from a unidirectional model to one where all participants contribute meaningfully to shared outcomes.

Beyond the higher-education challenges outlined above, a substantial WIL/WIE literature positions work-integrated approaches as curriculum-embedded strategies to build graduate employability and professional identity while offering clear design guidance for programs and partnerships (Rowe & Zegwaard, 2017; Billett, 2024). Recent syntheses further consolidate definitions, models and quality indicators across sectors, providing an authoritative reference point for institutions scaling co-creation with industry (Zegwaard & Pretti, 2023).

Within this theoretical landscape, the DART model—comprising Dialogue, Access, Risk Assessment, and Transparency—emerged as a practical framework to operationalize co-creation. The DART elements are designed to foster trust, engagement, and mutual learning, making them particularly relevant for higher education settings, where collaborative innovation and experiential learning are increasingly prioritized (Nagarethenam, Shamim and Ghazali, 2018).

Work-Integrated Learning (WIL) and its closely related strand, Work-Integrated Education (WIE), emphasize intentional, curriculum-embedded collaboration among higher education institutions (HEIs), workplaces, and students to enhance employability, relevance, and innovation in teaching and learning. In this perspective, co-creation is not merely a pedagogical add-on but a governance logic that distributes agency and responsibility across actors. The DART model operationalizes co-creation by specifying relational and informational conditions under which HEIs and external partners can jointly design, deliver, and evaluate learning and innovation outcomes. Positioning DART within WIL/WIE clarifies how structured communication, equitable resource access, shared risk governance, and openness enable practical, scalable collaboration between universities and companies. This study extends that conversation by empirically testing a context-adapted DART scale with workplace partners engaged in a university–business co-creation program.

A representative case in which the DART model can be applied is the WE: Working and Envisioning Community of Practice, particularly its Complex Challenge Based Learning activities, based on co-creation principles Bragança Polytechnic University | Instituto Politécnico de Bragança. WE is a faculty-led, cross-institutional ecosystem that convenes professors-facilitators, students from diverse backgrounds, and external stakeholders to co-create solutions to complex, future-oriented challenges. Grounded in a culture of dialogue, trust, innovation, and critical thinking. WE operates on 8–12-week challenge cycles with a structured cadence: joint scoping with company representatives (week 0–1), iterative problem framing and prototyping with weekly checkpoints (weeks 2–10), and a final review delivering actionable insights or prototypes (weeks 11–12). Roles are codified – teachers acting as facilitators ensure process fidelity and responsiveness; company representatives guarantee access to data, facilities, and decision-makers; student teams own proactive communication and evidence-based proposals.

Since 2017, the ecosystem has catalyzed regional engagement by coordinating more than 100 co-creation initiatives - reportedly 115 across research reports, prototypes, professional internships, and patents—thereby strengthening university–industry–society ties and generating practical outcomes for national and international development.

Although the DART model has been widely cited in business literature, empirical validations of its structure in the context of educational co-creation are scarce. This study contributes to this gap by translating and testing a Portuguese version of the DART scale among external stakeholders participants in the WE Complex Challenge Based Learning program, aiming to understand how these stakeholders perceive value co-creation practices in a higher education setting. The outcomes offer not only theoretical contributions to the co-creation literature but also practical insights for institutions seeking to optimize their collaboration frameworks with external partners.

METHODOLOGY

We employed a quantitative survey design to validate a psychometric instrument. Starting from the validated DART scale by Taghizadeh et al. (2016), we conducted a structured cross-cultural adaptation for Portuguese workplace partners. The process included forward translation by two bilingual subject-matter experts, reconciliation by a methods committee, back-translation by an independent translator, and cognitive pre-testing with academic and corporate participants to check clarity, cultural relevance, and role appropriateness. Minor wording changes were made to align items with the WE collaboration context while preserving construct intent.

Instrument

The adapted pool comprised 28 items across the original four DART domains (Dialogue, Access, Risk Assessment, Transparency) rated on a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree). For illustration, Dialogue items addressed frequency and quality of two-way communication; Access items assessed timely availability of information, data, or contacts; Risk items captured perceived joint responsibility and clarity about constraints; Transparency items covered expectation setting and decision-making openness.

Procedure and sample

Data was gathered through an online survey questionnaire sent to representatives of companies that had participated in at least one edition of the WE Complex Challenge Based Learning program; a total of 46 valid responses were received. Participation was voluntary and anonymized; no identifying operational data were collected beyond role and sector. Data collection occurred after project completion to reduce social desirability and role pressure.

Data analysis

To confirm the structural validity of the scale, Exploratory Factor Analysis (EFA) was used. The adequacy of the sample was determined by the Kaiser-Meyer-Olkin (KMO) measure in conjunction with Bartlett's Test of Sphericity. Principal component extraction as the method of factor analysis was used in conjunction with Varimax and Oblimin rotations. The utilization of both orthogonal and oblique rotations was a function of the hypothesis that co-creation dimensions can be related but different.

Through a process of purification by iteration, items with communalities less than 0.40, high cross-loadings, or a lack of theoretical fit were removed. Through multiple iterations, a stable solution was reached comprising two well-defined factors. Internal consistency of both factors was tested using Cronbach's alpha, where an acceptable cut-off value is $\alpha > 0.80$ for scales at early stages of validation (Hair *et al.*, 2019).

Results

The final factor analysis produced a two-dimensional structure explaining a combined total of 72.91% of the variance. The first factor, which we labeled “Interaction and Communication in the Co-Creation Process,” grouped seven items related to frequent communication, accessibility of resources, and responsiveness between companies and student teams. These items were originally part of the Dialogue and Access dimensions, but in this applied setting, they were empirically perceived as unified domain. This factor alone accounted for 59.79% of the total variance, with Cronbach’s alpha of 0.904, indicating excellent reliability. The second factor, “Transparency and Shared Risk Management,” comprised three items dealing with clarity of expectations, sharing of decision-making, and mutual responsibility. Interestingly, although Risk Assessment and Transparency were originally distinct dimensions in the DART framework, company respondents appeared to interpret them as intrinsically linked. This dimension explained an additional 13.12% of the variance and showed a Cronbach’s alpha of 0.912.

A detailed review of the item loadings showed clean groupings, with all final items demonstrating factor loadings above 0.60 and minimal cross-loadings. This reinforces the robustness of the factor solution and the suitability of the items for capturing key aspects of co-creation in a university-business partnership. Notably, several items were excluded during the purification process due to ambiguous phrasing, low communalities, or conceptual overlap. These included some original items from the Transparency and Risk dimensions, indicating that clearer operational definitions may be needed when working with diverse corporate audiences.

FINDINGS AND DISCUSSION

The findings from this study provide empirical support for the theoretical proposition that co-creation in higher education, while conceptually multifaceted, is often perceived by external stakeholders in more integrated terms. The fusion of Dialogue and Access into a single factor suggests that companies engaged in collaborative innovation prioritize frequent, open communication alongside practical access to knowledge, tools, and human resources. This aligns with previous studies that emphasize the operational entanglement of relational and resource-based aspects in effective co-creation (Ranjan and Read, 2016).

The second factor — Transparency and Shared Risk Management — highlights the importance of clarity, predictability, and joint accountability. Companies involved in WE Complex Challenge Based Learning valued not only being informed about project stages but also having shared ownership over potential risks and outcomes. This finding resonates with prior work on psychological safety and trust in inter-organizational collaborations (Zaborek and Mazur, 2019).

Moreover, the high reliability of both factors and the total variance explained underscore the psychometric strength of the adapted DART scale. Although the original four-dimensional structure of DART did not fully emerge in this educational context, the two dimensions identified are highly relevant and practically actionable. They capture the lived experience of external stakeholders participating in HEI-led innovation and provide a clearer, more parsimonious structure for future assessments.

These results also have implications for scale development in co-creation research. They suggest that models initially built for commercial environments may require simplification and reconceptualization when transferred to educational or hybrid settings. This insight supports calls in the literature for more context-sensitive validation of theoretical constructs, particularly in multi-stakeholder innovation ecosystems.

CONCLUSIONS AND IMPLICATIONS

This study successfully validated a shortened and adapted version of the DART model in the context of university-business collaboration through the co-creation within the WE Complex Challenge Based Learning program. The final two-factor structure—Interaction and Communication, and Transparency and Shared Risk Management—proved to be statistically robust and conceptually meaningful. Together, these dimensions offer a concise yet comprehensive framework to understand how companies perceive co-creation experiences in higher education.

From a managerial perspective, the adapted DART scale provides HEIs and program facilitators with a reliable tool to monitor and enhance the quality of stakeholder engagement. Institutions can use the findings

to improve facilitator training, align expectations between students and companies, and structure more transparent and equitable innovation projects.

In terms of policy and practice, the study highlights the importance of framing co-creation not just as a pedagogical method, but as a strategic partnership that requires intentional design and mutual commitment. Programs like WE Complex Challenge Based Learning demonstrate the potential of experiential, immersive learning to foster authentic collaboration and build bridges between academia and the labor market.

Future research should aim to replicate the study across different cultural and institutional contexts, including other innovation programs and sectors. It would also be beneficial to combine quantitative scale validation with qualitative interviews to capture richer, more nuanced understandings of co-creation dynamics. Additionally, testing the adapted scale among student participants and facilitators could offer a multi-perspective validation of its effectiveness and relevance.

In conclusion, while the DART model remains a powerful conceptual anchor for value co-creation, its application in higher education benefits from contextual refinement. The adapted version proposed here contributes to the operational toolkit of educators, administrators, and researchers working at the intersection of innovation, education, and organizational collaboration.

REFERENCES

- Abo-Khalil, A.G. (2024) 'Integrating sustainability into higher education challenges and opportunities for universities worldwide', *Heliyon*, 10(9). Available at: <https://doi.org/10.1016/j.heliyon.2024.e29946>.
- Amanzhol, N. *et al.* (2024) "'My expectation did not meet reality": challenges of undergraduate students in English-medium instruction in Kazakhstan', *Asian Education and Development Studies*, 13(1), pp. 31–44. Available at: <https://doi.org/10.1108/AEDS-06-2023-0062>.
- Billett, S. (2024). Constituting integration in work-integrated education and learning. *International Journal of Lifelong Education*. <https://doi.org/10.1080/0158037X.2024.2363262>
- Gill, S. and Singh, G. (2020) 'Developing inclusive and quality learning environments in HEIs', *International Journal of Educational Management*, 34(5), pp. 823–836. Available at: <https://doi.org/https://doi.org/10.1108/IJEM-03-2019-0106>.
- Hair, J.F. *et al.* (2019) *Multivariate Data Analysis*. 8th edn. England: Pearson Prentice.
- Jackson, D. and Dean, B.A. (2023) 'The contribution of different types of work-integrated learning to graduate employability', *Higher Education Research & Development*, 42(1), pp. 93–110. Available at: <https://doi.org/10.1080/07294360.2022.2048638>.
- Msomphora, M.R. (2025) 'Bridging borders: Global insights and challenges in internationalising higher education using a decade-long case study', *International Journal of Educational Research Open*, 8. Available at: <https://doi.org/10.1016/j.ijedro.2024.100402>.
- Nagarethenam, R., Shamim, A. and Ghazali, Z. (2018) 'The DART Perspective on Value Co-Creation between Frontline Employees and Internal Service Providers', *SHS Web of Conferences*, 56, p. 01005. Available at: <https://doi.org/10.1051/shsconf/20185601005>.
- Parambil, M.M.A. *et al.* (2024) 'Integrating AI-based and conventional cybersecurity measures into online higher education settings: Challenges, opportunities, and prospects', *Computers and Education: Artificial Intelligence*. Elsevier B.V. Available at: <https://doi.org/10.1016/j.caeai.2024.100327>.
- Ranjan, K.R. and Read, S. (2016) 'Value co-creation: concept and measurement', *Journal of the Academy of Marketing Science*, 44(3), pp. 290–315. Available at: <https://doi.org/10.1007/s11747-014-0397-2>.
- Rowe, A. D., & Zegwaard, K. E. (2017). Developing graduate employability skills and attributes: Curriculum enhancement through work-integrated learning. *Asia-Pacific Journal of Cooperative Education*, 18(2), 87–99.
- Schmied, A. *et al.* (2024) 'Co-creating with students to promote science of learning in higher education: An international pioneer collaborative effort for asynchronous teaching', *Trends in Neuroscience and Education*, 35, p. 100229. Available at: <https://doi.org/https://doi.org/10.1016/j.tine.2024.100229>.
- Schuessler, J. (2023) 'Transnational education, labor market outcomes and graduate employability: a scoping review', *Career Development International*, 28(2), pp. 196–216. Available at: <https://doi.org/https://doi.org/10.1108/CDI-05-2022-0121>.
- Taghizadeh, S.K. *et al.* (2016) 'Scale development and validation for DART model of value co-creation process on innovation strategy', *Journal of Business & Industrial Marketing*, 31(1), pp. 24–35. Available at: <https://doi.org/10.1108/JBIM-02-2014-0033>.

Vargo, S.L. and Lusch, R.F. (2004) 'Evolving to a New Dominant Logic for Marketing', *Journal of Marketing*, 68(1), pp. 1–17. Available at: <https://doi.org/10.1509/jmkg.68.1.1.24036>.

Zaborek, P. and Mazur, J. (2019) 'Enabling value co-creation with consumers as a driver of business performance: A dual perspective of Polish manufacturing and service SMEs', *Journal of Business Research*, 104, pp. 541–551. Available at: <https://doi.org/10.1016/j.jbusres.2018.12.067>.

Zegwaard, K. E., & Pretti, T. J. (Eds.). (2023). *The Routledge International Handbook of Work-Integrated Learning* (3rd ed.). Routledge. <https://doi.org/10.4324/9781003156420>