International Conference on Work Integrated Learning

WIL'22

WIL'22
7-9 DECEMBER 2022

ABSTRACT BOOK

Högskolan Väst

WIL Conference

7-9 December 2022, University West

Trollhättan, Sweden

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Conference program

HÖGSKOLAN VÄST

WIL conference: 7-9 December 2022

● Research track   ● Societal impact track

7th Dec	Time	Room	Activity
	08.30-10.00	Entré AIL	Registration and coffe
	10.00-10.15	Entré AIL	Welcome
	10.15-11.00	Entré AIL	Keynote: Barbara Czarniawska "Robots at work: a threat or a promise?"
	11.15-12.45	I or J house	Parallell article sessions: 4 reserach tracks (3 papers a 30 mins)
	12.45-13.45	Västan	Lunch
	13.45-15.15	I or J house	Parallell article sessions: 4 reserach tracks (3 papers a 30 mins)
	15.15-15.45	Entré AIL	Coffee break
	15.45-17.15	Entré AIL	WIL PhD students poster presentations
	18.00-20.00	Folkets Hus	Welcome reception by Trollhättans Stad, Folkets Hus
	20.00-22.00	Student house	PhD Student/Students Pub

8th Dec	Time	Room	Activity
	09.00-09.45	Entré AIL	Keynote: Stephen Billet "Constituting integration in work integrated education and learning"
	10.00-11.00	I or J house	Parallell article sessions: 4 reserach tracks (2 papers a 30 mins) + 1 extra T3b som tar T1s rum
	11.00-11.15	Entré AIL/I-J	Coffee break
	11.15-12.45	I or J house	Parallell article sessions: 4 reserach tracks (3 papers a 30 mins) + 1 extra T3b som tar T1s rum
	12.45-13.45	Västan	Lunch
	13.45-14.45	I or J house	Parallell article sessions: 4 reserach tracks (2 papers a 30 mins)
	14.45-15.00	Entré AIL	Short break
	15.00-15.45	Entré AIL	Keynote: Lee Rusznyak "A knowledge-building approach for enhancing work-based learning: Lessons from teacher education"
	15.45-16.30	Entré AIL	Coffee break
	16.30-17.30	Entré AIL	Panel session 1: "Knowledge and Lifelong Learning (LLL) in Higher Education and the surrounding society"
	19.00-19.30	Västan	Dinner speaker and reception drink
	19.30-23.00	Västan	Conference Gala Dinner 3 rätters med entertainment, Celebration 20 år!

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9th Dec	Time	Room	Activity
	09.00-09.45	Entré AIL	Keynote: Carsten Sorensen "What is Work Anyway? The Promises and Pittfals of Digitising Everything"
!	09.45-10.00	Entré AIL	Short break
	10.00-11.00	Entré AIL	Panel session 2: "Transformation and Sustainable development in Industrial Work-integrated Learning"
	11.00-11.30	Entré AIL	Coffee break
	11.30-12.30	Entré AIL	Panel session 3: "Social sustainability through Work-integrated learning"
	12.30-12.45	Entré AIL	Summing up and Conclusion
	12.45-13.30	Entré AIL	Grab your own lunch

WIL '22

Investigating the Learning Environment for Sustainable Lifelong Learning in Small and Medium Enterprises

Anh Truong*, *Department of Health Sciences, University West. anh.truong@hv.se.*

Veronica Bohlin, *Department of Health Sciences, University West. veronica.bohlin@hv.se*

Ngoc Buu Cat Nguyen, *School of Business, Economics and IT, University West. ngoc.buu-cat-nguyen@hv.se,*

Xhesika Ramaj, *Faculty of Computer Science, Engineering and Economics, Østfold University. ramaj.xhesika@hiof.no*

*Corresponding author

Introduction

Ever since the economy embraced industrialization, the world has witnessed various stages of industrial revolutions. The current one is referred to as industry 4.0, which was first considered a definition (Lasi et al., 2014), but nowadays has turned into a transforming technological process for organizations and their operations. The transformation is enabled by a vast number of advanced technological concepts and tools such as artificial intelligence, internet of things, augmented and virtual reality, etc. (Ghobakhloo, 2020). Embracing the aforementioned technological paradigms brings both opportunities and challenges for industrial organizations of all sizes. In this study, we will focus on the impact of this technological era on small and medium size enterprises (SMEs). Supported by for instance, innovative technologies, new ways of management, SMEs find themselves poorly equipped to encounter these new possibilities (Moeuf et al., 2018) due to lack of methodology and resistance to new ideas (Moeuf et al., 2016). These challenges pose a difficult problem for SMEs on how to improve the competitiveness of their employees.

In a constantly changing world, a functional working environment is required. To make the working environment more efficient and sustainable, lifelong learning (LLL) becomes important. LLL as a concept was introduced in the late 1960s. The term then referred to an ongoing individual educational process, a self-directed learning, aimed at self-realization or self-education. LLL represented an educational ideal with humanities with a focus on increased opportunities for education and learning alongside work, as well as it was considered a strategy to reduce educational gaps in society. However, the meaning of the term shifted from the end of the 1980s, LLL was instead primarily seen as part of a strategy for economic and technological development. The principle of LLL was underpinned with arguments from human capital theory and research on changing qualification requirements in working life (Ellström, 1997). Regardless of the changed meaning of LLL, one can still glimpse in this shift an aspiration to maintain a sustainable development for the individual and society. This endeavor is in line with what is also emphasized by the sustainable development global goals in agenda 2030 (Regeringskansliet, 2022). For the context of SMEs, the work for sustainable economic growth, full and productive employment and decent work for all, as well as building resilient infrastructure to promote inclusive and sustainable industrialization and promote innovation are considered particularly relevant. This speaks once again for the value of LLL in achieving sustainability in the work environment. Billett (2010) pointed out the meaning of engaging employees in work-related learning throughout their working lives. By doing so, efficiency is maintained in the workplace and at the same time employees gain knowledge to meet the demands of a changing society and working life. Seen from this perspective, LLL includes continuing education, both work-related and of a general nature to meet developments in work and society (Otala, 1994). Consequently, learning is a concern that cannot be ignored in this venture. The learning process is considered strongly influenced by the environment. A part in the work towards sustainable development is thus to increase our understanding and further our knowledge of the characteristic learning environments that promote LLL. In the context of SMEs it could include, for example, new challenges in working life, technology, human and society. This knowledge may give us guidance on how the environment in SMEs should be built to enable learning. The first step in this work could be to investigate the state of art in the area.

Aim

The aim of this study was to investigate the learning environment as described in the literature in the context of SMEs. On this regard, we have formulated the following research question:

How is the learning environment for employees described in the literature within the context of SMEs?

Methods

A scoping review was carried out following with the methodological framework of Arksey and O'Malley (2005) since it is claimed to be appropriate to summarize and disseminate research findings and check the current state of research within a field. Our search string was formulated as shown below:

(" lifelong learning " OR "sustainable learning" or "continuous learning") AND (small and medium enterprise" or "SME") AND ("employee" or "staff")

Systematic searches were made in the databases EBSCO, ACM Digital Library, and Web of Science. Included criteria were peer-reviewed articles written in English regardless of study design. To get a decent overview, publications from the year 2000 onwards were included. The search queries returned 21 papers. After skimming the abstracts, 14 papers were selected for reviewing.

Findings

The preliminary findings showed that the characteristic feature of this context is that innovation and competence are the driving forces for survival in a changing environment and a competitive market. There is an initiative of Investors in People (IIP) that is highly considered in relation to inculcating learning within SMEs (Smith and Collins, 2007). Accordingly, the learning environment is framed by methods of quality management and strategies of continuous improvement and creation of new initiatives (Haigiu and Tanascovici, 2012) as well as an understanding of SME circumstances (Hill and Stewart, 2000), HR functions, and kinds of budget (Reid and Harris, 2002). Apart from these, in constructing a learning environment, mentioned barriers are such factors including culture which relates to the way of management, finance, access, provision, and awareness (Lange et al., 2000). Additionally, learning materials, as well as the provision of support for learners, are needed to encourage and accommodate both the intricate patterns of collaboration and co-participation between learners and the complex interaction between learners and the workplace as a learning site (Andrade et al., 2014, Casalino et al., 2019, Thomson, 2004). With the digital era, technology plays a key role in making the learning environment more flexible in time and space (Andrade et al., 2014, Casalino et al., 2019, Ferraris et al., 2000, Thomson, 2004).

Nevertheless, there is a call to raise awareness of training and developing employees' competence and skills (Dealtry, 2008, Hunt et al., 2007, Moore et al., 2010, Smith and Collins, 2007). Training resources are usually limited, and employees' attitudes to training can also be a concern (Andrade et al., 2014, Casalino et al., 2019, Ferraris et al., 2000, Thomson, 2004). Further, the role of managers and owners of SMEs has been highlighted since they greatly impact employee training and development (Casalino et al., 2019, Dealtry, 2008, Haigiu and Tanascovici, 2012, Hill and Stewart, 2000, Lange et al., 2000). Thus, the factors forming a learning environment should be considered together to support the management of learning and the development of explicit links between learning and the needs of the business (Andrade et al., 2014, Casalino et al., 2019, Thomson, 2004). Here, the learners should be put in the center of learning activities to improve motivation and learning (Andrade et al., 2014, Casalino et al., 2019, Ferraris et al., 2000, Thomson, 2004). The aspect of networking encouragement needs to be built in the learning environment (Andrade et al., 2014, Casalino et al., 2019, Thomson, 2004). Overall, the studies emphasized the importance of integrating learning into working life. Interacting with fellow learners has also been highlighted. However, one of the studies has noted that interaction with peers to learn could not always be taken for granted in this context, as it is often characterized by a competitive nature (Ferraris et al., 2000). Lastly, it is also necessary to evaluate how the existence of specialist expertise within SMEs might shape perspectives on human resource development, which is one of the factors determining the form of a learning environment (Lange et al., 2000).

Discussion

With this study, we intend to contribute with an increased understanding of and knowledge about learning and the learning environment for employees in SMEs with the purpose to support a sustainable LLL. Operation of SMEs in an environment that is constantly changing, requires reactions to changes and adaptation to the new rules of the society sets. Identifying the characteristics of a robust learning environment will pave the way for a sustainable learning environment that will increase work efficiency and push society towards a more simultaneous and qualitative approach (Rogers, 2012, Sooraksa, 2012). In order to achieve this and based on the agenda for sustainable development, an issue that should be invested in, in addition to the individual employees, is to involve management and organizations in this work. Over and above that, a structure to support this development also needs to be built at a political level both nationally and internationally.

Future direction

A limitation of this study that should be mentioned, however, is the small number of articles found. Therefore, our proposal for the next step is to expand searches in more databases and adjust the search strings to better capture relevant studies that respond to the aim of the study. Despite this, this study has contributed with a hint of existing knowledge in the field.

References

ANDRADE, A., GOUVEIA, D., ESCUDEIRO, P. & DE CARVALHO, C. V. Can SME Managers Learn from Games? Proceedings of the XV International Conference on Human Computer Interaction, 2014. 1-5.

ARKSEY, H. & O'MALLEY, L. 2005. Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology,* 8**,** 19-32.

BILLETT, S. 2010. The relational interdepence between the personal and social agency in learning and for working life. *In:* VAN WOERKOM, M. & POELL, R. (eds.) *Workplace learning: Concepts, measurement and application.* Routledge.

CASALINO, N., BORIN, B., PIZZOLO, G. & CAVALLINI, S. Automation, Technology Transfer and Managerial Practices for Organizational Growth of SMEs. A Smart Curriculum for Competitiveness. 2019 IEEE Global Engineering Education Conference (EDUCON), 8-11 April 2019 2019. 1534-1541.

DEALTRY, R. 2008. Interim reflections on the corporate university and SME academy business development innovation and its diffusion. *Journal of Workplace Learning,* 20**,** 71-78.

ELLSTRÖM, P.-E. 1997. Att lära hela livet: vanetänkande och förnyelse i arbete och vardag. *In:* VON WRIGHT I.H, I. L., ELLSTRÖM P-E, EWERMAN A., GABRIELSSON ÅMAN C., WICKMAN K., ROSELL G., ILSTEDT S. (ed.) *Handla!* : Nerenius & Santérus.

FERRARIS, M., MANCA, S., PERSICO, D. & SARTI, L. 2000. Managing the change from face-to-face to distance training for SMEs. *Computers & Education,* 34**,** 77-91.

GHOBAKHLOO, M. 2020. Industry 4.0, digitization, and opportunities for sustainability. *Journal of Cleaner Production,* 252**,** 119869.

HAIGIU, A. & TANASCOVICI, M. Increasing competitiveness in the small and medium enterprises by introducing modern methods in quality management. Proceedings of the Entrepreneurship education - a priority for the higher education institutions, 2012.

HILL, R. & STEWART, J. 2000. Human resource development in small organizations. *Journal of European Industrial Training,* 24**,** 105-117.

HUNT, I., HENNESSY, M., O'BRIEN, E. & SHERRY, R. 2007. The graduate and the SME. *Education, Knowledge and Economy,* 1**,** 199-210.

LANGE, T., OTTENS, M. & TAYLOR, A. 2000. SMEs and barriers to skills development: a Scottish perspective. *Journal of European Industrial Training,* 24**,** 5-11.

LASI, H., FETTKE, P., KEMPER, H.-G., FELD, T. & HOFFMANN, M. 2014. Industry 4.0. *Business & Information Systems Engineering,* 6**,** 239-242.

MOEUF, A., PELLERIN, R., LAMOURI, S., TAMAYO-GIRALDO, S. & BARBARAY, R. 2018. The industrial management of SMEs in the era of Industry 4.0. *International Journal of Production Research,* 56**,** 1118-1136.

MOEUF, A., TAMAYO, S., LAMOURI, S., PELLERIN, R. & LELIEVRE, A. 2016. Strengths and weaknesses of small and medium sized enterprises regarding the implementation of lean manufacturing. *IFAC-PapersOnLine,* 49**,** 71-76.

MOORE, A., PARAHOO, K. & FLEMING, P. 2010. Workplace health promotion within small and medium-sized enterprises. *Health Education,* 110**,** 61-76.

OTALA, L. 1994. Industry-University Partnership. *Journal of European Industrial Training,* 18**,** 13-18.

REGERINGSKANSLIET. 2022. *The Global Goals and the 2030 Agenda for Sustainable Development* [Online]. Available: https://www.government.se/government-policy/the-global-goals-and-the-2030-Agenda-for-sustainable-development/ [Accessed].

REID, R. S. & HARRIS, R. I. D. 2002. The determinants of training in SMEs in Northern Ireland. *Education + Training,* 44**,** 443-450.

ROGERS, E. A. 2012. Development and Deployment of the Purdue TAP Green Enterprise Development Program. *Adult Learning,* 24**,** 22-29.

SMITH, A. J. & COLLINS, L. A. 2007. How does IIP deliver the lifelong learning agenda to SMEs? *Education + Training,* 49**,** 720-731.

SOORAKSA, N. 2012. Using Computer-Based Continuing Professional Education of Training Staff to Develop Small- and Medium-Sized Enterprises in Thailand. *International Journal of Training and Development,* 16**,** 235-242.

THOMSON, C. 2004. Working and Learning Together: ICT-Supported Learning in Small Businesses. Leiden, The Netherlands: Brill.

What matters to persons with heart disease, their family members and healthcare professionals? Co-learning about healthcare quality improvement in a Swedish cardiac care setting

Anne-Marie Suutari, *Jönköping Academy for Improvement of Health and Welfare, School of Health and Welfare, Jönköping University, Jönköping, Sweden; The Highland Hospital (Höglandssjukhuset), Eksjö, Region Jönköping County, Sweden*

Key words: Healthcare quality improvement; co-production of healthcare services; co-learning; cardiac care; Learning Café; Experience Based Co-Design, work integrated learning

Background and aims

Healthcare quality improvement "will lead to better patient outcomes (health), better system performance (care) and better professional development (learning)" (1). Co-production can be understood as an approach to healthcare quality improvement. In co-production, persons with illness, their family members and healthcare professionals co-plan, co-design, co-deliver and co-evaluate healthcare services (2). Co-learning about each other's needs and how to jointly address care areas that need to improve is a crucial part of co-producing the best possible health (3). To date, few research projects focus on exploring how co-production of healthcare services and co-learning about what matters to healthcare professionals, persons with heart disease and their family members and might play out in a cardiac care setting. Thus, the overall aim of this thesis is to create learnings about how stakeholders can improve cardiac care services thorugh co-production. This abstract focuses on the professionals' learnings when participating in co-produced healthcare quality improvements.

The first study in this thesis aimed at describing how a small-scale model for co-production, a Learning Café, might work in a cardiac care setting. To promote further co-production with persons with heart disease, the second study aimed at exploring the barriers to and facilitators of co-production. An Experience Based Co-Design methodology is used in the third and fourth study to facilitate co-learning about joint healthcare quality improvement among persons with heart failure, their family members, and professionals. The aims of the third study were to identify experiences of life with heart failure and its care and to identify what changes to heart failure care can be proposed based on these experiences. In the fourth study, a small group with professionals and patient and family member representatives will co-design heart failure care improvements. Prerequisites for joint healthcare quality improvement projects will be explored.

Work integrated learning – a theoretical perspective

Work-integrated learning (WIL) is here understood as an educational philosophy to enhance the careers of professionals (4). Here hands-on work experience and learning in a real-world setting are combined (4). In this research, healthcare professionals' careers are enhanced when working with healthcare quality improvement, co-produced with persons with heart disease and their family members. Hence, the professionals improve their knowledge about what matters to their patients and the family members and how to co-produce quality improvement initiatives that address these needs.

Context and methods

The research is set in cardiac care in the Highland health district in Region Jönköping County, Sweden as part of system-wide efforts to promote better health for persons with chronic disease (5). The research studies are conducted as a part of the healthcare professionals' daily wok duties. Primary care centers and a hospital serve the 115,000 inhabitants in the health district. Heart disease accounts for a major part of the disease burden in the health district's elderly population. Although the concept of "co-production of healthcare services" has lately become more familiar to professionals in Region Jönköping County, few departments and primary care centers have fully adopted the concept.

Study I was an organizational case study (6). Healthcare professionals tailored a Learning Café intervention aimed at increasing the sense of security in everyday life among persons with atrial fibrillation. A Learning Café is a co-produced group education program during which atrial fibrillation patients' questions about atrial fibrillation and its treatment were solicited and then answered by healthcare professionals (7). Data collection included measurements regarding sense of security in everyday life and focus group interviews exploring experiences and learnings from participating healthcare professionals and persons with atrial fibrillation.

Study II was a focus group study (8). Healthcare professionals, persons with heart failure and their family members participated in focus group interviews aimed at exploring barriers to and facilitators of co-production of healthcare services. Interviews were analyzed using deductive qualitative content analysis and the COM-B model (9, 10).

Study III and IV are based on an Experience Based Co-Design project (11) aimed at improving heart failure care. Data collection includes observations of healthcare consultations, filmed or audio recorded individual interviews and meeting minutes from stakeholders' feedback events. Data is analyzed using reflexive thematic analysis (12).

Results

Professionals participating in the Learning Café intervention reported gaining lessons about person-centered care, what matters to persons with atrial fibrillation and how to work with healthcare quality improvement. These learnings were reported to enhance work satisfaction among professionals. Persons with atrial fibrillation reported a greater sense of security in everyday life when learning more about atrial fibrillation and its treatment (13).

The second study (14) improved the professionals' knowledge about barriers to and facilitators of co-production of healthcare services. Results implied that healthcare professionals are motivated to co-produce healthcare services. However, they had limited and varying understanding of co-production as a practice. Another barrier was the professionals' unease with power sharing with patients and family members.

In the third study (15), five overarching themes mirrored the experiences of life with heart failure and its care: "I struggle everyday", "I don't understand heart failure", "Please, do not ignore me!", "How can I get involved?" and "Heart failure care can improve!". Persons with heart failure and their family members experienced a poor quality of life and were struggling to understand and apply information about heart failure and its care. To be recognized by professionals was experienced to be a crucial part of good quality care. However, participants often felt excluded from participation in care processes. These experiences translated into anticipated care improvements such as improved information, continuity of care, improved relations and communication and invitation to be involved in healthcare. Reflecting on these findings together with persons with heart failure and their family members, professionals gained knowledge about how to improve heart failure care to meet the needs of the service users.

Societal impact and relevance

This research promotes healthcare professionals' work integrated learning about how to acknowledge sick individuals as persons with individual needs, rather than patients defined by a disease. Second, research findings offer lessons regarding how healthcare services should improve to meet the needs of the persons living with disease.

References

1.   Batalden, Davidoff F. What is "quality improvement" and how can it transform healthcare? Qual Saf Health Care. 2007;16(1):2-3.

2.   Batalden M, Batalden P, Margolis P, Seid M, Armstrong G, Opipari-Arrigan L, et al. Coproduction of healthcare service. BMJ quality & safety. 2016;25(7):509-17.

3.   Osborne SP, Radnor Z, Strokosch K. Co-Production and the Co-Creation of Value in Public Services: A suitable case for treatment? Public Management Review. 2016;18(5):639-53.

4.   Murphy GA, Calway BA. Professional Development for Professionals: Beyond Sufficiency Learning. Australian journal of adult learning. 2008;48(3):424-44.

5.   Region Jönköpings län. Strategin Tillsammans för jämlik hälsa och ett bra liv i Jönköpings län (folkhälsa) 2016-2025 2022 [Available from: https://utveckling.rjl.se/strategier--handlingsplaner/strategin-tillsammans-for-jamlik-halsa-och-ett-bra-liv-i-jonkopings-lan-folkhalsa/?accordionAnchor=0.

6.   Suutari A-M, Areskoug-Josefsson K, Kjellström S, Nordin AMM, Thor J. Promoting a sense of security in everyday life—A case study of patients and professionals moving towards co-production in an atrial fibrillation "learning café". Health Expectations.0(0).

7.   Vifladt EH, Hopen L, Landtblom A-M. Hälsopedagogik – för vårdare och brukare i samarbete. En introduktion till bemästrande. Stockholm: Bilda Idé; 2010.

8.   Kitzinger J. Qualitative Research: Introducing focus groups. Bmj. 1995;311(7000):299-302.

9.   Elo S, Kyngas H. The qualitative content analysis process. Journal of advanced nursing. 2008;62(1):107-15.

10.   Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. Implementation science : IS. 2011;6:42-.

11.   The Point of Care Foundation. EBCD: Experience-based co-design toolkit 2021 [Available from: https://www.pointofcarefoundation.org.uk/resource/experience-based-co-design-ebcd-toolkit/.

12.   Braun V, Clarke V. Thematic analysis - a practical guide London: SAGE; 2022.

13.   Suutari AM, Areskoug-Josefsson K, Kjellstrom S, Nordin AMM, Thor J. Promoting a sense of security in everyday life-A case study of patients and professionals moving towards co-production in an atrial fibrillation "learning cafe". Health expectations : an international journal of public participation in health care and health policy. 2019;22(6):1240-50.

14.   Suutari AM, Thor J, Nordin AMM, Kjellstrom S, Areskoug Josefsson K. Improving Health for People Living With Heart Failure: Focus Group Study of Preconditions for Co-Production of Health and Care. J Particip Med. 2021;13(2):e27125.

15.   Suutari A-M, Thor J, Nordin AA, Areskoug Josefsson K. Improving heart failure care with an Experience-Based Co-Design approach: What matters to persons with heart failure and their family members? 2022.

Work-integrated learning in Swedish as a second language: a study of vocational directed SFI

Linda Febring, *PhD-student, Department of Social and Behavioral Studies, University West,*
linda.febring@hv.se

Keywords: Work-integrated Learning, Swedish as a Second Language, Vocational training, Migration, Boundary Crossing, Vocational Directed SFI.

Research topic

Adult migrants, coming to Sweden, can attend Swedish courses known as Swedish for immigrants (SFI), in order to learn the language. SFI is a qualified, basic language education (SOU 2020:66). Moreover, there is a possibility to combine the language studies with vocational training. Language learning takes place via language usage, and exposure to the language increases the fluency, as demonstrated by Chiswick and Miller (1995). Thus, when the adult migrant interacts in Swedish, at work or in society, informal language learning takes place. However, little is known about how this informal language learning comes about (Yates, 2017).

Motivation

Integrated language programs are arranged by municipalities in the belief that they will expedite language learning and contribute to labour market establishment (Lindberg & Sandwall, 2012). The idea of the programs is that it enhances the possibilities for newly arrived migrants to learn a vocation as well as learning appropriate professional communication in Swedish (Dahlström, 2019). In addition to this, further aims with the programs are reducing unemployment and securing competence in professions that are difficult to recruit to, as well as expediting migrants' entrance into the labour market (ibid.). However, these effects are not fully investigated (ibid.), and "[n]oteworthy is […] the lack of studies of vocational directed sfi" (SOU 2020:66, p. 460; my translation). Even though many migrants learn the language at the workplace, "we currently know very little about how this 'informal' language learning unfolds" (Yates, 2017, p. 429). One way to investigate this is through using boundary crossing theory, as used by Akkerman and Bakker (2012) in vocational education. Akkerman and Bakker (2012) outlined student transitions between school and workplace practice. The ambition with this project is to find out what boundary crossing mechanisms are in use in vocationally directed SFI-programs.

Research questions/aim

So far, there are no studies that have investigated vocationally directed SFI, even though these programs are offered by an estimated 61-86 percent of Swedish municipalities (Skolverket, 2022). In addition to this, there is a strong societal discourse which holds that the Swedish language is the key to integration and employment (Lindberg & Sandwall, 2017). The current research attempts to fill this gap by investigating the integration between components, aiming at facilitating learning, in vocational directed SFI. The purpose of this study is to investigate vocational directed SFI-programs and how the integration of components in these programs can contribute to the learning for the students attending them.

The research questions are

1. What processes are involved when vocational directed SFI-programs are initiated? How do they come about?
2. What affordances for learning at the boundary exist in the studied programs?
3. What learning at the boundary exist, and how is it established?
4. What role does *boundary objects* play at mediating learning at the boundary?

The context where the research is carried out is in Sweden, at vocational directed SFI-programs. This will be a compilation dissertation that will consist of four case studies. A combination of qualitative methods will be used. Specifically, these are interviews and document analysis (Study I), interviews (Study II), and ethnographic approaches (Study III and IV).

The first study is a retrospective case study of three vocational directed SFI-programs, investigating the background of starting up such a program. The purpose of the first study is to find out what processes contributed to the start-up of this type of program and to learn more about why the municipalities started offering the program and how they went about when starting it up. The aim of this study is to answer RQ1.

The second study is an interview case study with 13 participants, both sfi-teachers, vocational teachers and practice supervisors, in five vocational directed SFI-programs from two municipalities. The purpose of the second study is to map out the programs and the boundary crossings of the investigated programs. This study is published (see Febring & Henry, 2022). This study responds to RQ2.

The third study is planned to be an ethnographic case study of one vocational directed SFI-program. The researcher will spend a lot of time on site to see the collaboration between the teachers, and also to follow the students at their practice. The purpose of the third study is to investigate how learning at the boundary is established. The focus of this study is to answer RQ3.

The fourth study is also planned to be an ethnographic case study of one vocational directed SFI-program. The purpose of the fourth study is to investigate how learning at the boundary is mediated by the use of *boundary objects* (artefacts mediating at the border) (Engeström et al., 1995). This study relates to RQ4.

Theoretical and methodological perspectives

The dissertation is underpinned by socio-cultural theories on learning. For study II, III and IV, boundary crossing theory (Akkerman & Bakker, 2011) is used. According to Suchman (1993) "crossing boundaries means entering into a process of profound and uncomfortable social change" (p. 25). However, Akkerman and Bakker (2011) states that crossing boundaries has a potential for learning, which is emphasized by both cultural historical activity theory (Engeström, 1987) and communities of practice (Wenger, 1998).

Results and implications

The research will contribute to the WIL paradigm by considering the use of the concept in relation to Swedish as a Second Language (SSL). A first attempt at defining work integrated language learning (WILL) has been proposed, which reads as follows: "a program or other form of education that primarily targets the development of L2 skills, where classroom and workplace-based learning are intentionally combined, and where connections between settings are actively sought" (Febring & Henry, 2022, p. 19-20).

To understand the ways in which formal and informal knowledge and experiences are made relevant in language learning is of importance for teacher training programmes, teachers and teacher educators. Moreover, this study will be important for research about language learning, Swedish as a Second Language (SLL) and teacher training, as well as to SSL-students, sfi- and SSL-teachers, teachers of migrants, vocational supervisors, teacher-educators, but also for policy makers, all of whom can make more informed decisions about classroom practice.

References:

Akkerman, S. F., & Bakker, A. (2011). Boundary Crossing and Boundary Objects. *Review of Educational Research, 81*(2), 132-169. https://doi.org/10.3102/0034654311404435

Akkerman, S. F., & Bakker, A. (2012). Crossing boundaries between school and work during apprenticeships. *Vocations and Learning, 5*(2), 153-173. https://doi.org/10.1007/s12186-011-9073-6

Chiswick, B. R., & Miller, P. W. (1995). The endogeneity between language and earnings: International analyses. *Journal of labor economics*, 13(2), 246-288.

Dahlström, M. (2019). *Integrerad språk- och yrkesutbildning. Sfi med park och trädgård*. https://www.andrasprak.su.se/polopoly_fs/1.495615.1587371619!/menu/standard/file/Sfi%20med%20park%20och%20tra%CC%88dga%CC%8Ard%20Boodla%20NC.pdf

Engeström, Y. (1987). *Learning by expanding. An activity-theoretical approach to developmental research*. Helsinki, Finland: Orienta-Konsultit.

Engeström, Y., Engeström, R., & Kärkkäinen, M. (1995). Polycontextuality and boundary crossing in expert cognition: Learning and problem solving in complex work activities. *Learning and instruction*.

Febring, L. & Henry, A. (2022). Work integrated language learning: Boundary crossing, connectivity, and L2 affordances *Migration and Language Education, 3*(1). https://doi.org/10.29140/mle.v3n1.639

Skolverket (2022). *Kartläggning av kombinationsutbildningar. Delrapport inom ESF-projektet Kombinationsutbildning sfi*. https://www.skolverket.se/publikationer?id=10008

Lindberg, I., & Sandwall, K. (2012). Samhälls- och undervisningsperspektiv på svenska som andraspråk för vuxna invandrare. I K. Hyltenstam, M. Axelsson, & I. Lindberg (red.), *Flerspråkighet: en forskningsöversikt*. Stockholm: Vetenskapsrådet.

Lindberg, I., & Sandwall, K. (2017). Conflicting Agendas in Swedish Adult Second Language Education. *Entangled Discourses: South-North Orders of Visibility*, 119-136.

SOU. (2020). *Samverkande krafter: för stärkt kvalitet och likvärdighet inom komvux för elever med svenska som andraspråk* (9789138251119). Stockholm: Norstedts juridik.

Suchman, L. (1993). Working relations of technology production and use. *Computer supported cooperative work, 2*(1-2), 21-39. https://doi.org/10.1007/BF00749282

Wenger, E. (1998). *Communities of practice : learning, meaning, and identity.* Cambridge University Press.

Yates, L. (2017). Language learning on-the-job. In *The Routledge handbook of language in the workplace* (s. 425-436). Routledge.

When nursing education becomes political – Norm-critical perspectives in a campus-based clinical learning environment.

Ivan Andrés Castillo, *Department of Health Sciences, University West, Trollhättan. Ivan-andres.castillo@hv.se*

Motivation

Higher education institutions have changed from institutions of society into institutions in society, collaborating with other institutions and providing knowledge on contemporary social issues (Kwo et al., 2004). Colleges and universities with nurse educational programmes are integrating perspectives of social values and critical thinking in their educations and putting effort into how different sets of skills, such as social skills, could develop nursing students nursing practice. All in the strive to educate nursing students towards a sustainable society. Due to the fusion of social values into nursing educations, this study had the focal point of studying a specific campus-based clinical learning environment (CBCLE) that had implemented norm-critical perspectives in their educational composition.

Research aim

Therefore, the research aim of this study was to describe and explore the design and implementation of a CBCLE with a norm-critical perspective within a nurse education programme.

Results

The result of this study shows that during the design and implementation of the norm-critical perspective at the CBCLE three prominent themes were the driving force during the construction of the CBCLE. The first theme centres around that the studied nursing program had the objective to educate nursing students beyond traditional nursing education. The second theme, highlights that norm-criticism was implemented in partnership with society. The last theme dwells on that the perspective of norm-criticism implied an educative ambiguity for the CBCLE. Further, this study concludes that during the construction of the CBCLE the perspective of work-integrated learning framed the pedagogical process of implementation, which resulted in that novel layers of the concept of learning became relevant, opening up for other pedagogical perspectives to be aggregated. At the CBCLE the perspective of norm-criticism was aggregated and merged with the perspective of work-integrated learning, resulting in that social skills for nursing were emphasized and incorporated within the education at the learning environment. However, the perspective of norm-criticism entailed an ambiguity withing the studied institution because the non-normative approach of composing a CBCLE. The perspective of norm-criticism was elevated from an awareness level to nursing practice, containing social skills, and promoting emancipatory nursing. Moreover, the implementation of norm-criticism at the CBCLE also entailed an educative institutional hesitation due its proximity to politics. Further, by integrating the perspectives of work-integrated learning and norm-criticism, as the studied CBCLE's, also implicates that the notion of work-integrated educational environments for sustainable societies should be discussed in the future. The result of this study is going to be included in a compilation dissertation consisting of four studies.

Research topic

Research has indicated that the Swedish healthcare is not equal (Dahlgren & Pelling, 2020; Friberg, 2018). To achieve society's demand on providing an equal healthcare nursing educations ought to educate professional nurses that are able to deliver a sustainable, person-centered, and equal nursing care. In the strive to educate professional nurses, nursing education should discuss and illuminate power structures and other societal structures that mirror a society's diverse nature (Kraft et al., 2017). Additionally, the education that students in higher education are presented with has also to intertwine theory and practice, empower students to reflect about their own learning processes, and 'teach' students to use knowledge from several independent sources in the educational endeavor to evolve work-ready students (Cooper et al., 2010; Zegwaard et al., 2017). This study describes and explores the design and implementation of norm-critical perspectives within a campus-based clinical learning environment. The perspective of norm-criticism originates from anti-oppressive, queer, and feminist pedagogies. Norm-criticism uses reflective learning as a pedagogical tool to problematise and reveal how the concept of normality can impact individuals that are perceived as the "other". A core concept of norm-criticism is not on a focus or a scrutiny of the "other", rather on the reflective learners understanding of inequalities and how inequalities can be challenged

for more equal society (Isaksson et al., 2017; Tengelin et al., 2019; Bengtsson & Bolander, 2020). In nursing education, learning practical nursing is central and learning environments for this purpose have been arranged in different ways (Ewertsson et al., 2015). One way of organizing clinical learning environments are in the so called skills laboratories, clinical simulation centres (Abrandt Dahlgren et al., 2016; Msosa et al., 2021) or campus-based clinical learning environments. Research that focusses on exploring the perspectives of how different pedagogics are combined, such as work-integrated learning and norm-critical pedagogics, within campus-based clinical learning environments is non-existing or at least scant.

Context and methodological perspectives

The context of this study was a specific clinical learning environment for nursing education within a higher educational institution in a midsized Swedish town. Due to the spatial contextual aspect of the research subject and the explorative nature of the study, a qualitative case study design was chosen to approach the research aim at hand. The data of this study was comprised of two datasets: 7 qualitative semi-structured interviews with key informants, and 64 documents acquired at the archive of the studied university-college. A 6- step Reflective thematic analysis, inspired by Braun and Clarke (2022), was used to analyze the data and three themes were generated during the process. Further on, this study is currently being reviewed by "Advances in Nursing Science". This is the first study of four in a compilation dissertation.

Relevance and Societal impact

Hopefully this study is going to contribute to the educative research community's' body of knowledge by highlighting the perspectives of work-integrated learning and norm-critical perspectives within the context of nursing education. It might also be an example to other educational organizations when planning for remodeling educational environments that would like to integrate the perspectives of diversity and equality within their educational structure. At a societal level the relevance of this study might consolidate that sustainable and equal nursing care is a natural characteristic in the care that the future professional nurse will provide.

References

Abrandt Dahlgren, M., Fenwick, T., & Hopwood, N. (2016). Theorising simulation in higher education: difficulty for learners as an emergent phenomenon. *Teaching in Higher Education*, *21*(6), 613-627. https://doi.org/10.1080/13562517.2016.1183620

Bengtsson, J., & Bolander, E. (2020). Strategies for inclusion and equality – 'norm-critical' sex education in Sweden. *Sex Education*, *20*(2), 154-169. https://doi.org/10.1080/14681811.2019.1634042

Braun, V., & Clarke, V. (2022). *Thematic analysis : a practical guide*. SAGE Publications.

Cooper, L., Orrell, J., & Bowden, M. (2010). *Work Integrated Learning : A Guide to Effective Practice*. Taylor & Francis Group. http://ebookcentral.proquest.com/lib/vast-ebooks/detail.action?docID=496285

Dahlgren, G., & Pelling, L. (2020). *Jämlik vård: en handlingsplan*. Premiss.

Ewertsson, M., Allvin, R., Holmström, I., & Blomberg, K. (2015). Walking the bridge: Nursing students' learning in clinical skill laboratories. *Nurse Education in Practice*, *15*(4), 277-283. https://doi.org/10.1016/j.nepr.2015.03.006

Friberg, I. O. (2018). *Women's and men's health care utilisation from a cost perspective* [Dissertation Sahlgrenska Academy at University of Gothenburg].

Isaksson, A., Börjesson, E., Gunn, M., Andersson, C., & Ehrnberger, K. (2017). Norm Critical Design and Ethnography: Possibilities, Objectives and Stakeholders. *Sociological Research Online*, *22*(4), 232-252. https://doi.org/10.1177/1360780417743168

Kraft, M., Kästel, A., Eriksson, H., & Hedman, A. R. (2017). Global Nursing-a literature review in the field of education and practice. *Nurs Open*, *4*(3), 122-133. https://doi.org/10.1002/nop2.79

Kwo, O., Moore, T., & Jones, J. (2004). A focus on learning as universities change. . In O. Kwo, T. Moore, & J. Jones (Eds.), *Developing Learning Environments* (pp. 1-18). Hong Kong University Press. http://ezproxy.server.hv.se/login?url=http://search.ebscohost.com.ezproxy.server.hv.se/login.aspx?direct=true&db=nlebk&AN=321807&site=eds-live&scope=site&ebv=EB&ppid=pp_vii

Msosa, A., Bruce, J., & Crouch, R. (2021). Effect of a formative assessment intervention on nursing skills laboratory learning in a resource-constrained country. *Nurse Education Today*, *97*, 104677. https://doi.org/10.1016/j.nedt.2020.104677

Tengelin, E., Bülow, P., Berndtsson, I., & Lyckhage, E. (2019). Norm-Critical Potential in Undergraduate Nursing Education Curricula. *Advances in Nursing Science*, *42*(2), E24-E37. https://doi.org/10.1097/ANS.0000000000000228

Zegwaard, K., Campbell, M., & Pretti, J. (2017). Professional identities and ethics: The role of work-integrated learning developing agentic professionals. In T. Bowen & M. Drysdale (Eds.), *Work-Integrated Learning in the 21st Century : Global Perspectives on the Future* (pp. 145 - 160). Emerald Publishing Limited.

Café seminar: Stimulating Work-Integrated Learning in Research Education

Linnéa Carlsson*,[1]*University West, School of Business, Economics and IT, SE-461 86 Trollhättan, Sweden, linnea.carlsson@hv.se*

Camilla Gjellebæk,
[1]*University West, School of Business, Economics and IT, SE-461 86 Trollhättan, Sweden; Østfold University College, Faculty of Health, Welfare and Organisation, N-1757 Halden, Norway, camilla.gjellebak@hiof.no*

*Corresponding author
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Abstract

Many enrolled doctoral students experience a lack of community and uncertainty due to temporary and unpredictable positions. For example, doctoral students in Sweden report feeling lonely and lacking a sense of togetherness regarding their doctoral research program and research community (Akademiet for yngre forskere, 2021; Fackförbundet ST and Sveriges Förenade Studentkårer, 2021). A recent report states that only 15 percent of doctoral students in Norway complete their education by the end of the original contract period (Fodstad-Larsen, 2022), and they are described to battle various psychosocial challenges related to their work, work environment, and work-life.

The understanding of research community is, however, by no means a straightforward issue. How research communities develop is unclear, and the role and engagement of doctoral students within the community is equally challenging. Opportunities for social contact, academic discussions with fellow students, integration into the departmental community, and the possibility for doctoral students to become involved in the broader research culture are pointed out as triggers for a sense of togetherness (Brew et al., 2017). Nevertheless, these items reflect only a limited notion of a research community. For the triggers to contribute to a sense of togetherness and to a research community where the doctoral students experience learning as an integral part of the research education, it requires an operationalization of the triggers into tools and strategies.

Finding tools for building a community and sense of togetherness may be a way to hinder the sense of distress among doctoral students. Furthermore, finding structures to create long-lasting communities may benefit continuous networking among doctoral students contributing to lifelong learning. In this paper, we will explore how "world-café" seminars can be used as a tool and stimulation for community building in research education.

The case setting was one seminar session within a series of cross-border doctoral seminars designed to strengthen research collaboration between the participating higher education institutions and promote the exchange of experience and skills between doctoral students and research environments. The seminar series hosted 22 doctoral students from Norway and Sweden, and the participants had different academic backgrounds, belong to different research educations at different academic institutions, and are at different places in the process of their research education. The initiators of the seminars were the chairs of the doctoral forums at two academic institutions, one in Sweden and one in Norway. The chairs were also the ones guiding the participants through the café seminar process.

A world café is a seminar form which essence is an intervention for organizational change and development or community building amongst individuals, e.g., doctoral students. Its defining characteristic is how communication is based on conversations structured as dialogue. Here, the dialogue is proposed to create a meaning flow between participants, resulting in shared meaning and opportunities for life-long learning as well as learning as an integral part of work or education. Prewitt (2011) describes the cafe's unique contribution as the interventional form; of structured conversation in short cycles, which deliberately mixes participants between cycles to maximize knowledge exchange.

To initiate the café seminar, the essence of world café was introduced by the two chairs. The cafés were hosted by the same chairs, in the role as so-called café facilitators guiding the participants throughout the four cycles, each round lasting 20-30 minutes. In the first three cycles, one participant volunteered to be the table host with the position to anchor that table's conversation throughout multiple changes of visitors and potential changes of table hosts. The table host was responsible for holding the collective and evolving the topic at this table, and the other participants carried their collective and evolving stories with them. This café had four tables and three topics: i) Knowledge and Life-Long Learning ii) Transformation and Sustainable Development, iii) Social Sustainability. The "transformation and sustainable development" were discussed at two tables and the others at one each. In the first cycle, participants brainstormed in four smaller groups around the three topics the café facilitators presented. The second cycle started when a new composition of doctoral students gathered at each of the four café tablets.

The table host presented a summary from the previous discussion before a new brainstorming and discussion started. In the third cycle, participants changed tables again. This time they were encouraged to formalize and concretize the brainstorming notes into a structure containing the research topic, motivation, research question, context, theory and methodology, and contribution. In the fourth and final cycle, the doctoral students formed self-selected writing groups around the three overall topics. At this stage, the café seminar had been going on for 2,5 hours, and the participants were no longer bound to stay in the venue to finish. Hence, the seminar ended with the forming of writing groups. All the writing groups were encouraged to work further with the aim of designing a common abstract. Eight doctoral students chose to continue with the topic of knowledge and life-long learning, four with the topic of transformation and sustainable development, and five chose the topic of social sustainability. Our findings, based on participatory observation, oral feedback from the participants, and evaluation filled in after the seminars, show that a dialogical seminar is well suited for deriving cross-disciplinary research experiences amongst doctoral students. Sharing and exchanging experiences promote work-integrated learning in a research community initiated and led by fellow doctoral students. In the feedback the participants in the café seminar reported a sense of togetherness by being included in a safe community with fellow colleagues. The formal structure of the café seminar provided mutual ground and formalized dialogues amongst doctoral students who would otherwise not meet, and this provided a tool to formulate initiatives for long-lasting communities across disciplines and higher institutions.

References

Akademiet for yngre forskere (2021) *Karriere etter korona? En studie av hvordan koronapandemien har påvirket yngre forskere i Norge*. Rapport. Oslo: Akademiet for yngre forskere.

Brew, A., Boud, D. & Malfroy, J. (2017) The role of research education coordinators in building research cultures in doctoral education. *Higher Education Research & Development*, 36(2), p. 255-268. 10.1080/07294360.2016.1177812

Fackförbundet ST and Sveriges Förenade Studentkårer (2021) How Healthy Are Our Doctoral Students? Report No.0026. Stockholm: Fackförbundet ST.

Fodstad-Larsen, M. (2022) Avtalelengder og tidsbruk i ph.d.-utdanninga. Ei undersøking på grunnlag av data frå Felles studentsystem. Notat nr.04/2022). Bergen: Direktoratet for høgare utdanning og kompetanse.

Prewitt, V. (2011) Working in the café: lessons in group dialogue. *The Learning Organization,* 18(3), p. 189-202. https://doi.org.ezproxy.server.hv.se/10.1108/09696471111123252

Ropes, D., van Kleef, H. & Douven, G. (2020) Learning in The World Café: an empirical evaluation. *Journal og Workplace Learning,* 32(4), p. 303-316. https://doi.org/10.1108/JWL-10-2019-0126

Action case studies as method for industrial work-integrated learning¨

Lars Gunnar Furelid Tellnes, *Doctoral Research Fellow, Department of Engineering, Østfold University College, Norway. lars.g.tellnes@hiof.no*

Anna-Lena Kjøniksen, *Professor, Department of Engineering, Østfold University College, Norway. anna.l.kjoniksen@hiof.no*

Extended abstract

The large focus on sustainability and transition to a low carbon society has made it necessary for increasingly more companies to improve the skills of the staff regarding the analytical tools used to assess sustainability of products and organizations. For large companies, this task can be managed by separate directors, departments and staff. However, for small and medium sized companies and start-ups, the management of sustainability and emission reductions can be more challenging (European & Directorate-General for, 2020). This study addresses a process that was developed to support companies with life cycle assessment (LCA) as a tool to enable green business model innovation. Action case study was the approach to work with the companies and this study focus on this method as a potential for work-integrated learning. The research was applied in a project in cooperation with 20 small and medium sized enterprises (SME) in the Viken region in Norway. Most of these companies had little to none experience with LCA from before. The main hypothesis of this study is that for small and medium sized companies case studies with high relevance for their operational business is an effective method to learn new analytical tools for sustainability.

The study focusses on implementing the analytical tool LCA within a green business model innovation perspective in SME. Green business model innovation can be defined as *when a business changes part(s) of its business model and thereby captures economic value as well as reduces the ecological footprint in a life-cycle perspective* (Henriksen et al., 2012). Business model innovation is related to the creation or reinvention of a business, while innovation is often a new product or service. LCA is a family of methods to quantify the environmental impacts of a product and has been identified as one of many tools for green business model innovations (Henriksen, 2012). LCA methods are standardized in ISO 14044 in general, while the European Commission has contributed largely for harmonizing the LCA practice in European context through the development on international reference life cycle data system (ILCD). However, in practice the methodological approaches vary depending on goals and scope of studies, economic sectors and schools of thought (Beemsterboer et al., 2020).

To implement green business model innovation with LCA in a research setting, action research is applied. Action research is an approach that integrates theory and practice to address important issues in collaboration with those how experiences it. The focus is on collaborative learning and evaluation with combining action and reflections of co-generative knowledge. It is practiced across divers organizational sectors and communities. Within business and management, innovation and sustainability are two of six areas that have been found to be particularly relevant (Shani & Coghlan, 2021). For LCA, it has been applied in several studies where the researchers have collaborated with SME (Testa et al., 2017; Testa et al., 2022). Action research is iterative in nature and can go through steps of plan, action, observe and reflect in several cycles (Gabel, 1995).

The companies involved had a large variation of processes and products. This included plastic products manufacturing, food industry, construction industry, waste treatment and services. Hence, there was a need to develop analytical approach to each of the case studies individually. This was a large task in practice and the progress varied among the companies involved. In order to perform LCA, there is a need for the companies to supply data from the production and not all companies did provide these data. After one year, the companies were invited to a workshop to discuss the outcomes of the project and the challenges of making lower environmental impacts profitable. Most companies reported to have learned more about the impacts of their own company, but missed valuation of improvements at their customers. Further work in the project will focus on developing best case studies. This will hopefully provide the research on industrial work-integrated learning with updated empirical findings. For the companies involved, there seems to be higher potential for combined increased sustainability if the supply chain of companies is also involved in the processes.

References

Beemsterboer, S., Baumann, H., & Wallbaum, H. (2020). Ways to get work done: a review and systematisation of simplification practices in the LCA literature. *The International Journal of Life Cycle Assessment*, *25*(11), 2154-2168. https://doi.org/10.1007/s11367-020-01821-w

European, C., & Directorate-General for, E. (2020). *Eco-innovation in SMEs*. Publications Office. https://doi.org/doi/10.2779/352376

Gabel, D. (1995). *An Introduction to Action Research*.
http://physicsed.buffalostate.edu/danowner/actionrsch.html

Henriksen, K., Bjerre, M., & Bisgaard, T. (2012). *Green Business Model Innovation: Conceptualisation, Next Practice and Policy*. Nordic Council of Ministers.
http://urn.kb.se/resolve?urn=urn:nbn:se:norden:org:diva-2864

Henriksen, K., Bjerre, M., Bisgaard, T., Høgenhaven, C., Maria Almasi, A., & Damgaard Grann, E. . (2012). *Short Guide to Green Business Model Innovation.* (Nordic Innovation Publication 2012:19, Issue.

Shani, A. B., & Coghlan, D. (2021). Action research in business and management: A reflective review. *Action Research*, *19*(3), 518-541. https://doi.org/10.1177/1476750319852147

Testa, F., Nucci, B., Iraldo, F., Appolloni, A., & Daddi, T. (2017). Removing obstacles to the implementation of LCA among SMEs: A collective strategy for exploiting recycled wool. *Journal of Cleaner Production*, *156*, 923-931. https://doi.org/https://doi.org/10.1016/j.jclepro.2017.04.101

Testa, F., Tessitore, S., Buttol, P., Iraldo, F., & Cortesi, S. (2022). How to overcome barriers limiting LCA adoption? The role of a collaborative and multi-stakeholder approach. *The International Journal of Life Cycle Assessment*, *27*(7), 944-958. https://doi.org/10.1007/s11367-022-02070-9

Perceptions of Work Integrated Learning industry assessors on assessment of workplace learning at Central University of Technology

Thebe T Seipobi, *Central University of Technology,* Thebe.seipobi@student.hv.se

Extended Abstract

The Central University of Technology, Free State (CUT) offers career-orientated education, which consists of both theoretical and practical training components. Work-integrated learning (WIL) is a compulsory component of several instructional programmes offered at the CUT. The main aim of the WIL programme is to integrate academic knowledge with work experience in the appropriate field. WIL creates a platform where academic knowledge is applied to action through relevant work experience, and then knowledge, experience, and insights are brought back to class for further analysis and reflection. Assessment remains one of the biggest challenges in designing WIL programmes.

The purpose of this article is to evaluate the perceptions of Work Integrated learning industry assessors on WIL and the assessment thereof, using the case of the Central University of Technology (CUT) in central South Africa. The qualitative research approach will be applied through interviews conducted with WIL industry assessors in the Free State Province.

WIL is used as an overarching term to describe curricular, pedagogic, and assessment practices, across a vast array of academic disciplines that integrate both workplace learning and formal learning. This integration occurs through a range of WIL approaches (Billett, 2009). WIL is primarily intended to enhance student learning, and as a result, innovative teaching, learning, and assessment forms have to be developed. WIL includes various modalities such as problem-based learning, project-based learning, workplace learning action-learning, apprenticeships, cooperative education, experiential learning, inquiry learning, inter-professional learning, and practicum placements. The selection of appropriate modalities of work-integrated learning depends on the nature and purpose of a learning programme. Where WIL is a structured part of qualification the volume of learning allocated to WIL should be appropriate to the objectives, learning outcomes, and assessment criteria (Ferns and Moore, 2012).

During WIL, students are placed with participating employers in a practical work situation to apply the theory that they have been taught in the classroom. This assists students in gaining work experience and develop extra skills. In this study, work integrated learning is referred to specifically as a period of work placement for CUT students. The intention behind WIL programmes at CUT is that they are expected to offer students an opportunity to demonstrate mastery of varying degrees of skills and the ability to put their learning into practice in real-life contexts and as a result enhance their learning experience.

Assessing learning during WIL is critical because it adds to our understanding of how students learn in differing contexts (Forbes 2003). As in general education, WIL requires students to describe, explain, recognize, identify, relate, analyse, and synthesise learning material. Students would generally demonstrate their understanding in written or oral examinations, or in academic essays. In WIL, a range of more work-oriented assessment tasks can be developed, such as drafting reports that are like those done in professional practice or providing inputs on previously written reports. What is important to note is that in WIL learning outcomes of both formal and informal learning should be assessed, although the mechanisms for doing so might differ. Workplace learning will thus require a flexible approach to assessment (Jackson 2018).

WIL assessment is central to the integrity of the Central University of Technology. The is a need to balance different WIL stakeholders' perceptions as WIL assessment is sometimes perceived as a tedious exercise. The aim and contribution of this study is to contribute to a scholarly discussion about how to formulate the best way of assessing the acquisition of knowledge and skills acquired by students through WIL placement. At first, a literature review will be undertaken on the basic principles and nature of WIL, with an analysis of the status of WIL assessment locally and abroad.

References

Billett, S. (2009). "Realising the educational worth of integrating work experiences in higher education." Studies in Higher Education, 34 (7): 827-843.

Ferns, S. and Moore, K., 2012. Assessing student outcomes in fieldwork placements: An overview of current practice. *International Journal of Work-Integrated Learning*, *13*(4), p.207

Forbes, B. E. (2003). A quality assurance model for the assessment of work integrated learning at higher education institutions in South Africa. Cape Town: Cape Technikon

Jackson, D. (2018) Challenges and strategies for assessing student workplace performance during work-integrated learning, Assessment & Evaluation in Higher Education, 43:4, 555-570

Conceptualizing the home as a learning environment

Hanna Björner Brauer

Abstract

In the last thirty years, research on work-integrated learning has transitioned from focusing on educational and institutional contexts, to also including the professional contexts and industry independently, without necessarily being connected to higher education (see e.g de Figueiredo et al, 2020; Engeström, 2001; Billett, 2001; Tynjälä, 2012). One important reason for this is that in many sectors, working life has been changing for some time and continues to change, creating new needs, identities, practices, and competencies in different forms (Fenwick, 2006; Tynjälä, 2012). Global challenges such as climate change, urbanisation, digitalization, innovation, and new emerging markets are some examples of changes that are significantly altering conditions for working life (Engeström, 2001; Fenwick, 2006).

However, changing ways of thinking and acting through practices is not unique to places of paid work or higher education. Digitalization, smart technology, climate change, changing norms, economic and political conditions as well as changes in working life also affect the practices in peoples' private spheres. Already in 1983, in her book "More work for mother", Schwartz Cowan illustrated how industrialization and innovation of household technology have changed the way people, primarily women, do housework and how it in turn has affected norms and values in relation to housework. A more recent example is the pandemic, which in many ways affected the way we socialize, the way we work, the way we shop for groceries, travel, and many other things. In Sweden, another example is how politics on resource management has affected the way we take care of our waste. Furthermore, if households in countries such as Sweden are to be (more) sustainable, changes to our lifestyles may have to be adopted.

The aim of this paper is to propose the *home as a learning environment*, drawing on previous research that problematizes what learning environment is seen as superior and inferior. The objective is to further develop theories on learning environments from primarily Fenwick (2006) and Billett (2004) and open up new areas of application for these theories and Work Integrated Learning research. Fenwick (2006) criticizes some existing views on what a skill is and discusses different characteristics of knowledge transformation in changing work contexts, such as building identity and routinizing on the one hand and improvising and making fast decisions to solve emerging new problems on the other hand. This is relevant because changing contexts are, as mentioned above, not isolated to just professional life. Billett (2004) writes that there can be no separation of thinking, acting, and learning at work, because these activities all interact. Because workplaces are environments shaped by culture and history, participatory practices are important premises for understanding learning at work (Billett, 2004). Furthermore, Billet criticizes views on workplaces as informal and unstructured settings for learning, and further discusses that it is problematic to assume that learning that takes place outside of the classroom is somehow inferior, which might not be the case at all. I connect some of these ideas to a new setting for work-integrated learning, conceptualizing the household as another environment that, much like workplaces, is full of social practices. The paper also examines the concept of work and the valuation of work in relation to this.

There are a number of activities happening in households that could be used to examine the home as an environment for work and learning. For the purpose of this study, I chose the case of household electricity use as an example of a situation where learning at home becomes relevant, putting the idea of a learning environment in the context of social research on energy use in households. The topic of household electricity use has received a lot of attention lately, and in Sweden, different stakeholders including governmental authorities and municipal energy companies are encouraging households to change their energy practices. Thus, right now, a European energy crisis as well as the low-carbon energy transition of industries and transport systems are changing the cheap power supply in Sweden that previously has been taken for granted. Volatile and rising prices, de-centralization of energy production, changes in market structure, and even warnings of temporary power outs raise the question of how Swedish households can and will adapt to the situation. I argue that learning at home is a valuable perspective for understanding how household energy resilience and energy flexibility can come about. The amount of available household energy technology is increasing, and this affects the role and level of engagement of the user. At the same, households are encouraged to be more aware of energy use and to avoid power peaks. Things like steering a heat pump, installing a battery, utilizing solar panels, and charging your electric vehicle in alignment with price signals are good examples of technology-related activities that may require user learning at home.

However, skills and knowledge on how to change energy practices that is not dependent on high-end technology may also become relevant as a way to learn how to be energy resilient and able to adapt to a change in power supply. As previous studies have shown, skills and learning processes are relevant factors for changing energy practices in the home environment (Smale et al, 2017; Stelmach et al, 2020; Higginson et al, 2014), even if they hitherto have not been the specific objective of study for social research, which instead has put most of its focus on the practices themselves.

As an important part of this theory development, I argue that unpaid work is still indeed relevant work, and why work-integrated learning as a research field therefore should not exclude but rather welcome the environments where much of this unpaid work takes place. The study provides a number of examples and arguments for why unpaid housework should be of interest to the research area of work-integrated learning. This is done through a literature review of social studies on energy use in households as well as literature on work, and by discussing what a conceptualization of the home learning environment may look like. Contributions include expanding the research topics where this perspective can be applied, especially related to sustainable lifestyles, of which we are in dire need if we want to reach the global goals set in Agenda 2030.

References

Billett, S. (2001). Learning through work: workplace affordances and individual engagement. *Journal of workplace learning*, *13*(5), 209-214.

Billett, S. (2004). Workplace participatory practices: Conceptualising workplaces as learning environments. *Journal of workplace learning*.

Cowan, R. S. (1983). *More work for mother*. basic books.

de Figueiredo, M. D., de Castro, N. M., & Silva, M. E. (2020). A practice-based learning approach toward sustainable consumption in the workplace. *Journal of Workplace Learning*.

Engeström, Y. (2001) Expansive Learning at Work: Toward an activity theoretical reconceptualization, *Journal of Education and Work*, 14:1, 133-156, DOI:10.1080/13639080020028747

Fenwick, T. (2006). Learning as grounding and flying: Knowledge, skill and transformation in changing work contexts. *Journal of Industrial Relations*, *48*(5), 691-706.

Higginson, S., Thomson, M., & Bhamra, T. (2014). "For the times they are a-changin": the impact of shifting energy-use practices in time and space. *Local Environment*, *19*(5), 520-538.

Smale, R., Van Vliet, B., & Spaargaren, G. (2017). When social practices meet smart grids: Flexibility, grid management, and domestic consumption in The Netherlands. *Energy research & social science*, *34*, 132-140.

Stelmach, G., Zanocco, C., Flora, J., Rajagopal, R., & Boudet, H. S. (2020). Exploring household energy rules and activities during peak demand to better determine potential responsiveness to time-of-use pricing. *Energy Policy*, *144*, 111608.

Tynjälä, P. (2013). Toward a 3-P model of workplace learning: A literature review. *Vocations and learning*, *6*(1), 11-36.

Mapping of digital projects cooperation through and within a municipal organization - Experiences from Trollhättan, Sweden

Hedvig Rudström, *University West, School of Business, Economics, and IT, SE-461 86 Trollhättan, Sweden,*
Hedvig.rudstrom@hv.se

Keywords: Work Integrated Learning, Digital Twin City, socio-technical and cooperative managerial digital transformation, digitalization

Urban planners and local governments show increasing interest in the Digital Twin City (DTC) concept. By building and recreating the physical city in a digital representation, changes in the physical environment can be tested and predicted. Thus, DTC displays the potential to streamline problem solving processes for several issues facing planners and local governments. Hence, DTC is regarded as having the potential to be more effective and efficient in understanding and solving the challenges facing urban planners but can also be a tool to reshape the governance structures of cities today. The Digital Twin is a relatively new concept, introduced in the beginning of the 2000s (Grieves, 2019) and was mostly used in production engineering (Batty, 2018). However, with the increased interest of "ICT" (Information and Communications Technology) and "smart cities" in urban research during the last century the concept of a digital twin was applied on cities in 2017 (World Economic Forum, 2022). The Digital Twin concept is in its most strict definition is "a mirror image of a physical process that is articulated alongside the process in question, usually matching exactly the operation of the physical process which takes place in real time" (Batty, 2018, p. 817). With the use of visualized and contextualized real time data planners, civil servants, businesses, and citizens can simulate scenarios in the model before performing it in the "real world." Hence, DTC is regarded as having the potential to be a more effective and efficient tool in understanding and solving the challenges facing urban planners but can also be a tool to reshape the governance structures of cities today. However, attempts to integrate the DTC concept have focused on integrating quantitative data into the model (Thuvander et al. 2020). Charitonidou (2022) challenged the framework of the digital twin as enhancing the participation possibilities of citizens and urban actors because of the a) limited sets of variables and processes and b) the same variables and processes lack appreciation of the social aspects and qualitative measures of the urban context (p.249).

This project aims to look at the concept and adaptation of the DTC concept through the case of Trollhättan municipality. The municipality just launched the project of the digital twin this year and currently it is still in the first steps. Therefore, the project and its processes are still limited to the Maps and Surveying Office (MSO) in the Public Works Administration with work distributed between a few civil servants. Because of the initial stages of this municipal project this article will take part in, not only exploring the existing workflows, but participating in creation of additional frameworks through critical analysis of previous attempts of adopting a digital twin concept on the urban scale and research in the field.

The purpose of this study is to engage in the DTC project as it exists today within the municipality and through close and cooperative analysis create a supplementary framework supporting additional, democratic, and qualitative values in municipal planning in the local context.

Part of this new framework is to, in addition to the digitalization processes currently happening within urban governance, propose a framework inspired by Henri Lefebvre´s spatial triad. A theory that divides and shows connection between the different dimensions of space – the conceived space (created by planners), perceived space (where people appropriate space) and lived space (the mediation between the two previous). In short, the spatial triad concept acknowledges that humans not only use space but produce it by inhabiting space and representing space. We are therefore both the users and producers of space.

The spatial concept of Lefebvre also includes the concept of *abstraction*. Abstract space is, according to Lefebvre (1991) and later further developed by Purcell (2020), the manifestation of space as a quantified, rationalized, and homogenous space (Purcell, M., 2020, p. 8). Central to the idea of the digital twin city is the concept of abstraction. Abstraction in this sense is represented by the blurred line between the physical system and the digital representation in the digital twin concept. The understanding of the DTC project, with the utilization of the spatial triad and abstract space concept, is therefore of the DTC as not only a passive representation of the physical processes of the city but a reactive and proactive model establishing methods of action.

This project grew through dialogue with the civil servants and managers in the Public Works Administration at Trollhättan municipality as a part of a larger cooperative project between University West and Trollhättan Stad.

The study's structure takes its form as a case study and the empirical material consists of dialogue and discussions with civil servants and managers involved in the DTC project and documentation. As mentioned, the DTC initiative is relatively new within the organization, so the material is yet to grow. However, because of the cooperative structure between the researcher and the municipality the opportunity to engage early in the process is favorable, giving the opportunity to look at the process as it is now and contribute with frameworks guiding the way forward.

The methodological foundation will take inspiration from Flyvbjerg (2001) and his understanding of the case study. This approach springboards form the understanding of the social sciences as a science entrenched in the unique case. Flyvbjerg argues for the inquiry of praxis guided by four value-rational questions: (1) where are we going? (2) is this desirable? (3) what should be done? (4) who gains and who loses; by which mechanisms of power? (Flyvbjerg, 2018, p.60). These four questions allow us to look beyond the mere description of phenomena and instead engage in social praxis. An approach like that of Flyvbjerg presents a practice that highlights contexts and narratives of what powers are at play, how these mechanisms of power have consequences on the DTC project and finally how these might be changed for other outcomes.

The cooperative structure of this project will contribute to, instead of intensifying agreements of rational within the municipal project, understanding the relationships between rationality and power. Understanding the relationship between what is considered knowledge, and how decisions are made based on the rationality of the organization. The relationship and dialogue between civil servants and politicians, between knowledge, power and democracy will be of interest in the research project and for the framework suggested to the municipal DTC project.

References

Batty, M. (2018). *Digital twins. Environment and Planning B: Urban Analytics and City Science*. 45(5), 817–820. https://doi.org/10.1177/2399808318796416

Charitonidou, M. (2022) "Urban scale digital twins in data-driven society: Challenging digital universalism in urban planning decision-making," International journal of architectural computing, 20(2), pp. 238–253. Doi: 10.1177/14780771211070005.

Flyvbjerg, B. (2012) Making social science matter: Why social inquiry fails and how it can succeed again. Translated by S. Sampson. Cambridge, England: Cambridge University Press.

Grieves, M., (2019) Virtually Intelligent Product Systems: Digital and Physical Twins, in Complex Systems Engineering: Theory and Practice, S. Flumerfelt, et al., Editors. American Institute of Aeronautics and Astronautics. p. 175-200.

Lefebvre H. (1991) The Production of Space. Oxford. Balckwell

Purcell, M. (2022) "*Theorizing democratic space with and beyond Henri Lefebvre*," Urban studies (Edinburgh, Scotland), 59(15), pp. 3041–3059. Doi: 10.1177/00420980211067915

Thuvander, L., Latino, F., Zangelidis, C., Adelfio, M., Naserentin, V. & Logg, A. 2020, "Towards spatial integration of qualitative data for urban transformation - Challenges with automated geovisualization of perception of urban places", IOP Conference Series: Earth and Environmental Science.

World Economic Forum (2022) Digital Twin Cities: Framework and Global Practices. Available: https://www.weforum.org/reports/digital-twin-cities-framework-and-global-practices/#:~:text=The%20digital%20twin%20city%20is,feasible%20path%20for%20urban%20upgrading. [Accessed: 2022-11-15]

Belongingness, peer support, social connections, and well-being of WIL students in Canada, Germany, and Sweden

Maureen Drysdale, *PhD, Professor, Psychology, St. Jerome's University Adjunct Professor, Faculty of Health, University of Waterloo Director, Well-Link Research Lab, St. Jerome's University 290 Westmount Rd. North | Waterloo, ON CA, N2L 3G3*

Mirjam Folger, *PhD, Head of Research Support, Baden-Heidenheim Cooperative State University (DHBW), Marienstraße 20, 89518 Heidenheim an der Brenz, Germany Mirjam.Folger@dhbw-heidenheim.de*

Kristina Johansson, *PhD, Associate Professor, Pedagogy, and Director for LINA, University West, 461 86 Trollhättan, Sweden, kristina.johansson@hv.se*

Andreas Mahr, *PhD, Professor, Prorector and Dean, faculty of Technology. Vice-President, Baden-Heidenheim Cooperative State University (DHBW), Marienstraße 20, 89518 Heidenheim an der Brenz, Germany, Andreas.Mahr@dhbw-heidenheim.de*

Sarah Callaghan, *Med Doctoral student, Faculty of Health, University of Waterloo Lab Manager, Well-Link Research Lab St. Jerome's University 290 Westmount Rd. North | Waterloo, ON CA, N2L 3G3, scallaghan@uwaterloo.ca*

Keywords: Well-being, health, WIL, sense of belonging, peer support, social connections

Introduction

WIL in the context of higher education is a model of experiential education as per Kolb's theory (Kolb, 1984; Kolb & Kolb, 2012) - which intentionally integrates students' theoretical academic studies within a workplace or practical environment The purposeful integration of theory with practice supports learning, with the workplace serving as the mechanism for the enhanced learning, and while students are the primary focus of WIL, the essential philosophy is an educational partnership between universities, employers, and communities with the aim of providing students with an enriched learning experience (Blom, 2013; Johnston, 2017).

Students who participate in a work-integrated learning (WIL) program during their higher education studies are often better prepared for work after graduation compared to students who do not receive discipline specific practical experience (Mandal & Edwards, 2021; Smith et al., 2019; Weldon & Ngo, 2019). But does this better preparedness come with a price? Do these students - who often spend months away from their campus community – have adequate access to important support networks and/or do they struggle with their well-being? Research has shown that overall well-being, social and peer support, social connections, and establishing a strong sense of belonging are believed to be important in a successful school-to-work transition and achieving a strong career identity (Conely et al., 2014; Huegaerts et al., 2020; Ruschoff et al., 2018). Students who participate in WIL – however have less access to their peers and the university community due to being away for work terms (McBeath et al., 2018). It is unknown whether this influences their overall well-being and subsequent transition to full-time work after graduation. As such, they deserve attention in the research on participation in WIL programs and the subsequent transition to the labour market.

Goal and Research Questions

This study furthers our understanding of how support systems and sense of belonging impact student mental health and well-being during work-terms. The results can inform the design of a support intervention aimed at improving and maintaining health and well-being outcomes for WIL students. Results also contribute to the literature regarding WIL, sense of belonging, peer support, social connections, well-being, and preparedness for school-to-work transitions.

The study involved developing and administering a quantitative measure to examine aspects of, and the importance of, peer support and sense of belonging on improved mental health and well-being for WIL students. We also examined the role that social media and social connections played in this relationship. More specifically, we addressed the following research questions:

1. What perceptions do WIL students have about sense of belonging and peer support?
2. What demographic factors impact sense of belonging and peer support?
3. How does WIL influence peer support and sense of belonging?

4. How are peer support and sense of belonging related to mental health, and other psychological and health related outcomes in our WIL students?
5. What role does social media and in particular virtual social connections play in sense of belonging, peer support, and well-being?
6. What is the relationship between sense of belonging, peer support, social connections, mental health, and preparedness for school-to-work transitions?

Methods

Data was collected from three institutions of higher education, namely University of Waterloo in Canada, University West in Sweden, and Baden-Heidenheim Cooperative State University (DHBW) in Germany. Ethical clearance was secured at all three institutions prior to data collection. Participants (WIL students) completed an online survey addressing sense of belonging, social and peer support, school-to-work self-efficacy, social media use, and well-being during their WIL placements. In addition to demographic variables (sex, age, year of study, and number of WIL placements) and constructed items measuring school-to-work efficacy and social media use for support and belonging, the survey also contained the following published scales:

- *Sense of Belonging Instrument* (SOBI: Hagerty & Patusky, 1995)
- *Psychological Sense of School Membership* (PSSM: Goodenow, 1993)
- *Interpersonal Support Evaluation List* (ISEL -shortened version: Cohen et al., 1985)
- *Self-Description Questionnaire III* (*SDQ-III*: Marsh & O'Neill, 1984)
- *Satisfaction with Life Scale* (SWLS: Diener et al., 1985)
- *Well-Being Manifestation Measure Scale* (WBMMS: Massé et al., 1998)

Consent to participate was indicated by the participant's voluntary completion of the online survey. The survey took approximately 15 to 20 minutes to complete. After correcting for missing data, the final data set had a sample size of 480 (University of Waterloo, n=190; University West, n=112, DHBW, n=178).

Data Analysis

Descriptive analyses provided frequencies, percentages, means, and standard deviations for the demographic variables. A series of t-tests were run to determine significant differences on the dependent variables as a function of country and demographics. A series of ANOVAs followed by Tukeys' HSD post hoc analysis, were run to determine significant main effects. Levene's test was performed for the demographic independent variables and the assumption of homogeneity of variance was satisfied. Finally, correlational analysis was run to examine significant relationships between the dependent variables – Sense of Belonging, Peer Support, school-to-work efficacy, Mental Health, and Well-Being. Incomplete scales (i.e., missing data) were eliminated from the analysis.

Results

Results indicated that WIL students from the three institutions reported only moderate levels of sense of belonging, however they perceived high levels of support from their peers. Higher levels of sense of belonging to the university community and access to high quality peer support was strongly related to better overall mental health and well-being. Interestingly, while WIL students perceived social media and virtual social connections during work terms as playing an important role in supporting their sense of belonging to peers and the university community, they preferred face to face social interactions for promoting their well-being. Additional results and implications will be provided in the presentation.

References

Cohen, S., Mermelstein, R., Kamarck, T., & Hoberman, H. (1985). Measuring the Functional Components of Social Support. In I. G. Sarason & B. Sarason (Eds.), Social support: Theory, Research, and Applications (pp. 73-94). The Hague: MartinusNijhoff.

Conley, C. S., Kirsch, A. C., Dickson, D. A., & Bryant, F. B. (2014). Negotiating the transition to college developmental trajectories and gender differences in psychological functioning, cognitive-affective strategies, and social well-being. *Emerging Adulthood, 2*(3), 195-210. https://doi.org/10.1177/2167696814521808

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment 49*(1), 71-76. https://doi.org/10.1207/s15327752jpa4901_13

Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools, 30*, 79-90.

Hagerty, B. M. K., & Patusky, K. (1995). Developing a measure of sense of belonging. *Nursing Research, 44*(1), 9–13. https://doi.org/10.1097/00006199-199501000-00003

Johnston, N. (2017). Navigating continuous change: A focus on self-direction and skills and

knowledge transfer. In T. Bowen, & M. T. B. Drysdale (Eds.), *Work-integrated learning in the 21st century: Global perspectives on the future* (International Perspectives on Education and Society, Vol. 32, pp. 19-33). Bingley, UK: Emerald Publishing Limited.

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and*

development. Englewood Cliffs, NJ: Prentice Hall.

Kolb, A. Y., & Kolb, D. A. (2012). Experiential learning theory. In N. M. Seel (Ed.)

Encyclopedia of the Sciences of Learning (pp. 1215-1219). New York, NY: Springer US.

Mandal, N.K. & Edwards, F.R. (2021). Student work readiness in Australian engineering workplaces through work integrated learning. *Higher Education, Skills and Work-Based Learning, 12*(1), 145-161. https://doi.org/10.1108/HESWBL-02-2021-0025

Marsh, H. W., & O'Neill, R. (1984). Self description questionnaire III: The construct validity of multidimensional self-concept ratings by late adolescents. *Journal of Educational Measurement*, 21, 153-174. https://doi.org/10.1111/j.1745-3984.1984.tb00227.x

Massé, R., Poulin, C., Dassa, C., Lambert, J., Belair, S., & Battaglini, A. (1998). The structure of mental health: Higher-order confirmatory factor analyses of psychological distress and well-being measures. *Social Indicators Research 45*(1-3), 475-504. https://doi.org/10.1023/A:1006992032387

McBeath, M.L., Drysdale, M.T.B., & Bohn, N. (2018). Work-integrated learning and the importance of peer support and sense of belonging. *Education + Training, 60*(1), 39-53. https://doi.org/10.1108/ET-05-2017-0070

Huegaerts, K., Wagener, M., & Vanroelen, C. (2020). Is mental health a predictor for a smooth school-to-work transition? A 20-month follow-up study of Brussels youth. *Applied Research in Quality of Life, 15,* 1549-1567. https://doi.org/10.1007/s11482-019-09749-6

Ruschoff, B., Salmela-Aro, K., Kowalewski, T., Dijkstra, J. K., & Veenstra, R. (2018). Peer networks in the school-to-work transition. *Career Development International, 23*(5), 466-477. https://doi.org/10.1108/CDI-02-2018-0052

Smith, C., Ferns, S., & Russell, L. (2019). Placement quality has a greater impact on employability than placement structure or duration. *International Journal of Work-Integrated Learning, 20*(1), 15-29.

Weldon, A., & Ngo, J. K. (2019). The effects of work-integrated learning on undergraduate sports coaching students' perceived self-efficacy. *International Journal of Work-Integrated Learning, 20*(3), 309-319.

Sustainable workplace learning (SWPL) in Finnish police, hospital, and ICT-organizations – A comparative study

Kaija Collin*, PhD, Associate Professor, University of Jyväskylä, Department of Education, PL 35, FI-40014 University of Jyväskylä, E-mail: kaija.m.collin@jyu.fi

Marianne Jaakkola, PhD-student, Project researcher. University of Jyväskylä, Department of Education, PL 35, FI-40014 University of Jyväskylä, E-mail: marianne.e.jaakkola@jyu.fi

Sara Keronen, PhD-student, Project researcher, University of Jyväskylä, Department of Education, PL 35, FI-40014 University of Jyväskylä, E-mail: sara.e.keronen@jyu.fi

Soila Lemmetty, University Researcher. University of Eastern Finland, PL 111, 80101 Joensuu, Finland. E-mail: soila.lemmetty@uef.fi

*Corresponding author

Keywords: sustainable workplace learning, well-being, police, hospital, ICT, content analysis

Abstract

Contemporary working life increasingly requires competencies and abilities to solve problems. The requirements of continuous problem solving have created a paradoxical situation in which the employees are simultaneously motivated to learn and stressed over continuous learning. Thus, learning at work is not always inspiring activity for individuals but can also be exhausting. For instance, due to rapid digitalization, workplace learning has been suggested to be one of the occupational health risks in the future. Researchers have called for a critical approach to WPL, which frames it not only as a positive but also as a conflicted and problematic activity in terms of individuals', groups', and organizations' development and well-being (Albinsson & Arnesson, 2012; Fenwick, 2004). Research on sustainability and learning has focused on viewing learning as a tool for environmentally sustainable innovations, which lacks understanding of the sustainability of peoples' learning processes and outcomes themselves. Thus, the element of sustainability in theories of workplace learning (WPL) is missing. Nevertheless, especially in the context of working life, it is essential to first focus on promoting the sustainability of people and social communities (Pfeffer, 2010), as they ultimately enable environmentally and economically sustainable development (Albinsson & Arnesson, 2012; Kearney & Zuber-Skerrit, 2012; Scully-Russ, 2012).

We initially identified three perspectives through which to examine sustainability in WPL: 1) the perspective of individuals' well-being at work, 2) the perspective of the widespread use and transfer of knowledge (Tractenberg et al., 2016) and 3) the perspective of the rapid application of new knowledge (Hays & Reinders, 2020). First, well-being is not limited just to the lack of illness or disease. Rather, it is a condition of physical, mental, and social well-being, which is the foundation of human sustainability. It also links to critical approaches of WPL that view technological change as obliging employees to engage in continuous learning, thus increasing their overall burden and leading to a weakened sense of well-being at work (Painter-Morland et al., 2017; Lemmetty & Collin, 2020; Järvensivu & Koski, 2012). Second, the widespread use and transfer of knowledge means that learning is not restricted to one specific situation, but it can take place in other settings as well, thus saving individual resources (Lemmetty & Collin, 2020; Boud & Soler, 2016). From this perspective, learning emerges as broad competence, with deep knowledge and skills that can be utilized in multifaceted ways. The third perspective pertains to the applicability of new learning. Learning is sustainable if new knowledge or skills can be utilized as soon as possible after their adoption (Brandi and Christensen, 2018). When this occurs, competence is supported and strengthened, as is the future applicability of the learning.

In this study, we examine sustainable learning from the perspectives of transferability and continuity of learning, and learning-related well-being in the preventive police work, hospital, and ICT work. The aim of this research is to increase the understanding of sustainable learning in all forementioned contexts. Thus, in this paper, we ask: What kind of descriptions of sustainable learning can be found from the speech of preventive police work, hospital, and ICT personnel?

The study is based on qualitative methods, and the data consists of 86 semi-structured thematic individual interviews from three contexts lasting about an hour. The data material was analyzed with the help of theory-based content analysis (Hsieh & Shannon, 2005). Descriptions of sustainable learning were first found in the data, paying attention to the interviewees' descriptions of the transferability and continuity of learning and the aspect of well-being. All localized descriptions were compiled in a table under the headings "transferability of learning", "continuity of learning," and "well-being" depending on which theoretical category to which the description

belonged. The descriptions were then examined for similarities and differences by category. Thus, the subcategories were formed under each main category describing the main categories at a deeper level. The descriptions of sustainable learning identified in the interviews from three different contexts will be described and compared in the presentation in WIL2022. Findings will be discussed, and further research needs presented.

References

Albinsson, G., & Arnesson, K. (2012). Team learning activities: Reciprocal learning through the development of a mediating tool for sustainable learning. The Learning Organization, 19(6), 456–468.

Boud, D., & Soler, R. (2016). Sustainable assessment revisited. Assessment and Evaluation in Higher Education, 41(3), 400-413.

Brandi, U., & Christensen, P. (2018). Sustainable organizational learning—A lite tool for implementing learning in enterprises. Industrial and Commercial Training, 50(6), 356–362.

Hays, J., & Reinders, H. (2020). Sustainable learning and education: A curriculum for the future. International Review of Education, 66, 29–45.

Hsieh, H.-F., & Shannon, S. E. (2005). Three Approaches to Qualitative Content Analysis. Qualitative Health Research, 15(9), 1277–1288. https://doi.org/10.1177/1049732305276687

Kearney, J., & Zuber-Skerritt, O. (2012). From learning to learning community: Sustainability through lifelong learning. The Learning Organization, 19(5), 400–413.

Lemmetty, S., & Collin, K. (2020). Throwaway knowledge, useful skills or a source for wellbeing? Outlining sustainability of workplace learning situations. International Journal of Lifelong Education, 39(5-6), 478–494.

Prugsamatz, R. (2010). Factors that influence organization learning sustainability in non-profit organizations. Learning Organization, 17, 243-267. 10.1108/09696471011034937.

Scully-Russ, E. (2012). Human resource development and sustainability: Beyond sustainable organisations. Human Resource Development International, 15(4), 399–415.

Tractenberg, R., FitzGerald, K., & Collman, J. (2016). Evidence of sustainable learning from the mastery rubric for ethical reasoning. Education Sciences, 41, 400–413.

Work integrated learning for a working life in academia – experiences from working with PhD-students during the covid-19 pandemic

Kristina Areskoug Josefsson, *University West, Trollhättan, Sweden⸴ Oslo Metropolitan University, Oslo, Norway; Jönköping University, Jönköping, Sweden.* kristina.areskoug-josefsson@hv.se

Key words: Academic work, PhD, Digital learning activities, Improvement project

Work integrated learning in academia and wellbeing for PhD-students

Few PhD-students have a clear plan for their coming career after completion of their PhD-studies. There can be dreams of starting new enterprises, combining research with innovations in practice, or to pursue a career in academia. In health and welfare research schools there are many PhD-projects involving single PhD-students, as well as part-time PhD-students whose project is connected to their workplace. Research shows risk of low wellbeing and high levels of stress among PhD-students, together with feelings of isolation and impostor syndrome (Seeber and Horta, 2021, Schmidt and Hansson, 2018). Such negative feelings negatively impact the outcome of the PhD period and may also affect the future career of the PhD-student. To promote and sustain PhD-students health and wellbeing, there is a need to test activities that can decrease experienced negative stress during the PhD-period as well as enhancing academic competencies like academic leadership, academic writing skills and pedagogical skills. In addition, successful academics should have excellent competence in their field, collaborate with stakeholders and engage in impact activities. Thus, the PhD period needs to provide work integrated learning in academia to provide learning opportunities to develop those skills. Research concerning PhD-students' wellbeing and progress shows that the supervisor has an extremely important role for completion of the PhD and for the wellbeing of the student (Buirski, 2022). However, there are limited resources set up for PhD supervision and mentoring, which can create stress and mismatch in needs and capacities between the supervisor and the PhD-student. During the covid-19 pandemic the risk of losing pace in PhD-projects increased, in addition to disconnectedness with academy due to digital instead of physical meetings. However, this change also provided opportunities for novel and pragmatic ways of structuring supervision and enhancing the self-efficacy of the PhD-students. The purpose is to present learnings and outcomes of work-integrated learning project in academia for PhD-students.

The focus is on two novel learning activities: online writing retreats and online monthly meetings, which were tested during the covid-19 pandemic. The aim of the learning activities was to encourage the PhD-students to be the leaders of their projects, to collaborate with others to find their role in academia, and learn the trade of being an academic, while practicing doing so, and promote wellbeing during the PhD period. The project has been performed with Plan-Do-Study-Act (PDSA) in biannual evaluation cycles. The PDSA is a quality improvement tool focusing on the translation of ideas and intentions into action (Reed and Card, 2016). The iterative structure of PDSA is well suited to promote learning of a tested change and help shape organizational culture for the better (Reed and Card, 2016). Evaluation data includes number of participants, types of spin-offs from the learning activities, and participants' oral and written feedback on the learning activities. The collected data was analyzed from the perspective of usefulness of the learning activities related to theories of work-integrated learning.

Online structured digital writing retreats

Open to more than the PhD-students supervised by the facilitating supervisor (any PhD-student who considered themselves in need of learning better academic writing structure, master students who wanted to become PhD-students, other supervisors who wanted to see how a digital writing retreat worked). This activity showed participants the importance and diversity of academic writing. The participants chose their own writing tasks, report on their progress, and plan for their next step – but being their own controller and thus actively practicing self-leadership. At the same time the participants shared their feelings of participating in the writing retreat when reporting their writing progress – thus creating a social, international, and interdisciplinary forum, increasing their networks and enhancing feelings of belonging. This in turn ignited cross-project collaboration, thematic discussions and sharing of scientific literature of importance. As facilitating supervisor, I participated on the same level as other participants, sharing my writing progress and feelings related to academic writing.

The 1-hour monthly meetings for PhD students supervised by the same supervisor

The meetings were co-designed by the PhD-students, where the first meeting developed from a shared practical problem concerning digital data safety. Coming meetings were then co-designed depending on experienced needs by the PhD-students. The PhD-students were in different phases of their PhD-process; thus, they could bring in varied perspectives and share learning with each other on the academic processes. They could also discuss issues that they considered important, such as being asked to review for a journal or being asked to teach at bachelor or master programs. Such collaborative working discussions across projects and disciplines are important in academia

and the meetings were used to solve problems in academic practice and to test scientific ideas. As the meetings also were led in turn by the participating PhD-students, academic leadership skills were practiced in this setting. As participating supervisor, I had a more passive role than in traditional supervision meetings, and the meetings were inspirational and provided opportunities for shared learning.

Outcomes from the novel learning activities

The PhD students themselves describe how they have both acquired increased academic skills, and that the online writing retreats have been important in decreasing negative stress, creating a safe social environment which has been important for their wellbeing. The shared learning activities also presented a view of how to work together in academia, which may support the students when thinking of their future career and if this is to relate to academia. As a supervisor, I can clearly see that the activities have enhanced self-efficacy, leadership skills, cross-disciplinary collaboration, national and international networks and decreased dependency on supervisors. The additional bonus of those work-integrated learning activities has been the good progress of the participants' projects and joy at work!

References

BUIRSKI, N. 2022. 'Ways of being': a model for supportive doctoral supervisory relationships and supervision. *Higher Education Research & Development,* 41**,** 1387-1401.

REED, J. E. & CARD, A. J. 2016. The problem with Plan-Do-Study-Act cycles. *BMJ Qual Saf,* 25**,** 147-52.

SCHMIDT, M. & HANSSON, E. 2018. Doctoral students' well-being: a literature review. *Int J Qual Stud Health Well-being,* 13**,** 1508171.

SEEBER, M. & HORTA, H. 2021. No road is long with good company. What factors affect Ph.D. student's satisfaction with their supervisor? *Higher Education Evaluation and Development,* 15**,** 2-18.

Exploration of patterns of work integrated learning in co-produced online courses in higher education- Findings from the Sexual Health project

Gerd Hilde Lunde*, *Oslo Metropolitan University, Oslo, Norway P.O. Box 4. St Olavs Plass, 0130 Oslo, Norway.* *hlunde@oslomet.no*

Kristina Areskoug Josefsson, *Oslo Metropolitan University, Oslo, Norway;University West, Gustava Melins Gata 2, 461 32, Trollhättan, Sweden.* *kristina.areskoug-Josefsson@hv.se*

*Corresponding author

Teaching sexual health to create knowledge useful in practice

Sexual health is closely related to general health and quality of life, and needs to be understood within specific social, economic, and political contexts. As sexual health is a topic insufficiently communicated about in health and welfare, there is risk of decreased health and quality of life (WHO, 2022). Professionals in health and welfare often lack competencies in sexual and reproductive health and rights (Areskoug Josefsson et al., 2019) and there is a need to reform teaching of sexual health (Areskoug-Josefsson & Lindroth, 2022). Work integrated learning is essential in providing useful competencies for practice, thus in teaching a topic like sexual health work -integrated learning is essential. To not be able to handle sensitive issues, like, sexual health, affects the health of the person in need of support, but also creates stress for the professional if the professional does not have sufficient competence to support sexual health when needed to (Haboubi & Lincoln, 2003; Jaarsma et al., 2010; Lunde, 2013; Wang et al., 2018).

The Sexual Health project, developed seven master level online courses in co-production with more than 100 stakeholders (students, patients, professionals, NGO-representatives, academics). Co-production was used in development of the courses and is also used as a theoretical standpoint in the evaluation of the learning outcomes and patterns of work integrated learning. However, there are challenges in bringing co-production theory into practice (Farr et al., 2021), and thus there is a need to evaluate if the co-production process of this project has been fruitful in creating courses of value for practice. Sexual Health is a taboo-topic, and a topic that can sensitive to teach (Selberg, 2021) and therefore evaluation of the courses is of specific importance.

The project took place during 2020-2022 at Oslo Metropolitan University, Norway, and was founded by the Norwegian Directorate of Health and the Norwegian Directorate for Higher Education. The courses are designed to meet the needs of professionals working sexual health in various ways, and to use the students working context as. The courses were co-produced with stakeholders, as were the learning outcomes and the forms of examination. The stakeholders were participating in the steering group and the eight reference groups but were also active as subproject leaders for the courses. The courses are designed to promote learning for life and through life regardless, of geographic place and at low costs, aspiring to meet the individual person's professional needs. The intention has been to use e-books to a large extend to ensure lower costs and promote sustainability and to keep down costs for literature, thus enabling students to be able to afford to take the courses. The intent in the courses is to provide flexible learning opportunities, to enable students to take the course with as much time flexibility as possible. The co-production process in developing and evaluating courses was a key concept to ensure valuable learning outcomes for practice. The student interactive engagement is at various levels in the courses; within the course with the course learning material, by using the course material at the students' workplaces and between students during the course. The course setup provides strategies for finding knowledge, reflection on needs for knowledge and creation of new knowledge by using different perspectives on the provided learning material and to integrate the new knowledge in practice. As for example the students are encouraged to share films, podcasts, and literature from the course with work colleagues.

The first courses are currently on-going and being evaluated concurrently to ensure continuous learning within the project, creation of novel learning spaces and promotion of sustainable lifelong learning. The aim of the research is to explore patterns connected to lifelong learning in evaluations of the co-produced online courses and how the students have been able to integrate their working life into the course work and exams. Data is collected with a digital learning tool, Feedbackfruits, external reviews from stakeholders and online discussions in the learning platform with the students. The presentation covers research in progress, which is suitable considering the interactive collaboration which the project is based on.

Patterns from evaluations from course testers, students and stakeholders participating in project processes are analyzed together with data from the ongoing courses. The preliminary evaluation results indicate that the co-produced online course design is valid to promote lifelong learning useful in working life. Preliminary patterns are stories of experiencing personal and professional growth, expanded professional perspectives, increased engagement with stakeholders and increased digital literacy. All skills important in working life.

The findings which will be further discussed from theories of co-production and work integrated learning. Findings from the project can be useful when working with course design with stakeholders to promote lifelong learning useful in practice.

References

Areskoug-Josefsson, K., & Lindroth, M. (2022). Exploring the role of sexual attitude reassessment and restructuring (SAR) in current sexology education: for whom, how and why? *Sex Education*, 1-18. https://doi.org/10.1080/14681811.2021.2011188

Areskoug Josefsson, K., Schindele, A. C., Deogan, C., & Lindroth, M. (2019). Education in sexual and reproductive health and rights (SRHR) – Mapping SRHR-related content in higher education in health care, police, law and social work in Sweden. *Sex Education*, *19*(6), 720-729. https://doi.org/DOI: 10.1080/14681811.2019.1572501

Farr, M., Davies, P., Andrews, H., Bagnall, D., Brangan, E., & Davies, R. (2021). Co-producing knowledge in health and social care research: reflections on the challenges and ways to enable more equal relationships. *Humanities and Social Sciences Communications*, *8*(1), 105. https://doi.org/10.1057/s41599-021-00782-1

Haboubi, N. H., & Lincoln, N. (2003). Views of health professionals on discussing sexual issues with patients. *Disability and Rehabilitation*, *25*(6), 291-296. https://doi.org/306T2HVP9V2UGU03 [pii]

Jaarsma, T., Stromberg, A., Fridlund, B., De Geest, S., Martensson, J., Moons, P., Norekval, T. M., Smith, K., Steinke, E., Thompson, D. R., & group, U. r. (2010). Sexual counselling of cardiac patients: nurses' perception of practice, responsibility and confidence. *Eur J Cardiovasc Nurs*, *9*(1), 24-29. https://doi.org/10.1016/j.ejcnurse.2009.11.003

Lunde, H. (2013). Ansatte og temaet seksualitet: Hvilke utfordringer opplever ansatte i sitt arbeid når det gjelder voksne med intellektuell funksjonsnedsettelse og seksualitet? [Employees and the topic of sexuality: What challenges do employees experience in their work when it comes to adults with intellectual disabilities and sexuality?]. *Nordisk tidsskrift for helseforskning*, *9*(2), 58-71. https://doi.org/https://doi.org/10.7557/14.2820

Selberg, R. (2021). Trigger warnings – om undervisning och politisk gränshållning i 2020-talets sociala landskap. *Högre utbildning*, *11*(2). https://doi.org/10.23865/hu.v11.3412

Wang, K., Ariello, K., Choi, M., Turner, A., Wan, B. A., Yee, C., Rowbottom, L., Macdonald, R., Lam, H., Drost, L., & Chow, E. (2018). Sexual healthcare for cancer patients receiving palliative care: a narrative review. *Ann Palliat Med*, *7*(2), 256-264. https://doi.org/10.21037/apm.2017.10.05

WHO. (2022). *Defining sexual health*. Retrieved 8 November from https://www.who.int/teams/sexual-and-reproductive-health-and-research/key-areas-of-work/sexual-health/defining-sexual-health

Caring for Persons With Intellectual Disabilities and Challenging Behavior: Staff Experiences With a Web-Based Training Program

Anh Truong*, *Department of Health Sciences, University West, Trollhättan, Sweden.*
anh.truong@hv.se

Catrin Alverbratt, *Department of Health Sciences, University West, Trollhättan*

Anette Ekström-Bergström, *Department of Health Sciences, University West, Trollhättan ; Department of Nursing and Reproductive, Perinatal and Sexual Health, School of Health Sciences, University of Skövde, Skövde, Sweden*

Helena Antonsson, *Department of Health Sciences, University West, Trollhättan; Department of Nursing, Umeå University, Umeå, Sweden*

*Corresponding author

Abstract

Background: The quality of care for persons with intellectual disabilities (ID) is affected by many factors, including the knowledge of the professionals. Educational training in, for example, general communication was identified as a priority issue among healthcare professionals working with persons with IDs, as it is the basis for a better understanding of the clients and their behavior, which can otherwise be perceived as problematic and challenging. Challenging behaviors (CB) have been reported by professionals as problems they frequently witness or experience and/or struggle to manage in the daily work. Yet they do not always have access to such training nor to the resources needed to practice skillful communication when supporting persons with IDs. In addition, challenges concerning the competence provision in the sector are likely to contribute to further deterioration of the situation.

Earlier research has shown that web-based training for staff within healthcare settings can generate good results. In addition to being able to participate during work hours, staff can also overcome access issues in the delivery of training. With this study, we hope to advance an existing web-based training program with the intention to move toward well-evaluated and proven training in order to contribute to competence provision in the context of health and social care.

Aim: To explore staff experiences with a web-based training program in relation to their professional care for persons with ID and CB.

Methods: Staff working in residences for people with ID within municipal health and social care were offered the web-based training. In total 20 residences in a medium-size city in Sweden were included in this study. After completed training, fourteen semi-structured interviews were carried out with individual staff members to gather data regarding their experiences with web-based training in relation to their profession. The informants constituted of 11 women and 3 men, aged 27–55. Of the nine informants who had received upper secondary school education, five had specialized in the care of persons with IDs. More precisely, one informant had received higher vocational education, whereas the remaining four had received university education in the social sciences. The work experience with persons with IDs ranged from 8 to 30 years. The interviews were based on two open-ended questions: *"What is your experience of attending the web-based training?"* and *"What do you think about the web-based training in relation to your daily work with persons with IDs and CB?"* Follow-up questions were directed in such a way as to encourage the staff to freely share their experiences.

This study has an inductive approach. The collected data were analyzed using qualitative content analysis as described by Graneheim and Lundman (2014).

Results: The staff's experiences with the web-based training program in relation to their professional care for persons with IDs and CB were presented as a single main theme: *"Web-based training for staff initiates a workplace learning process by promoting reflections on and awareness of how to better care for persons with IDs and CB".* This theme contained three categories: *"Web-based training provides freedom but also requires responsibility, both of which affect the learning outcome"*, *"The learning process contributes to generating insights about caring"* and *"The mutual impact of training and the opinions of staff about learning for the care of persons with IDs and CB".* These categories were based on eight sub-categories.

Overall, the staff claimed that they had gained novel insights into the profession and into the caring process for the clients. Opinions about clients and CB changed somewhat, and the staff was inspired to adopt new ways of working which ultimately benefited interactions with the client. At the same time, requests were made for additional group discussions, and the desire for better planning to enhance learning among the staff was expressed.

Discussion: In this study, web-based training seemed to have had a stimulating effect on workplace learning. Sharing self-reflections with group members in addition to individual study is essential for stimulating and consequently extracting knowledge from training. In the preparation of the training, close attention was paid to how to enable both individuals and social processes in learning but, judging from the results, further developments should focus on optimizing the effect of social interaction.

Additionally, organizational support appears to be relevant for improving learning outcomes. However, prior research has shown significant differences in perceived workplace learning support from different occupational groups. Higher-status occupations offer a workplace environment that is more conducive to learning than that of lower-status occupations.

These aspects must be addressed and overcome to fully develop the competence provision and counteract potential negative consequences in terms of job satisfaction and well-being among professionals working with persons with IDs.

Conclusions and clinical implications: Our findings illustrate the complexity of providing staff training in the workplace through a web-based training program. Beyond the benefits of web-based training for workplace learning, some challenges also emerged. We conclude that web-based training, workplace organization, and individuals' opinions each have an important impact on the learning outcome. To reach the best possible outcome, however, resources need to be invested in all three parts concurrently. This knowledge can contribute to the development of competence provision in municipal health and social care services more generally, where similar circumstances in terms of a notable downward trend in competence provision prevail, a pattern that could have negative impact on the welfare of the professionals.

In addition to knowledge, cooperation in both healthcare and social services was also highlighted to improve care for persons with IDs and CB. In order to better meet their needs, professional teamwork is critically important. Hence, future research should investigate the views of other professionals e.g. nurses regarding education and competence development. This approach would enrich our knowledge and understanding of how the competence provision could be enhanced in this context to contribute to social sustainability in the sector.

References

ANTONSSON, H., GRANEHEIM, U. H., ISAKSSON, U., ÅSTRÖM, S. & LUNDSTRÖM, M. O. 2016. Evaluation of a web-based training program for professional carers working with people with learning disabilities and challenging behavior: A pilot study with SSED-design. *Issues in mental health nursing,* 37**,** 734-743.

BIGBY, C. & BEADLE-BROWN, J. 2018. Improving quality of life outcomes in supported accommodation for people with intellectual disability: What makes a difference? *Journal of Applied Research in Intellectual Disabilities,* 31**,** e182-e200.

BRENNAN, E. M., SELLMAIER, C., JIVANJEE, P. & GROVER, L. 2019. Is online training an effective workforce development strategy for transition service providers? Results of a comparative study. *Journal of Emotional and behavioral Disorders,* 27**,** 235-245.

DALTON, C. & SWEENEY, J. 2013. Communication supports in residential services for people with an intellectual disability. *British Journal of Learning Disabilities,* 41**,** 22-30.

GRANEHEIM, U. H. & LUNDMAN, B. 2004. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today,* 24**,** 105-112.

HARTEIS, C., BILLETT, S., GOLLER, M., RAUSCH, A. & SEIFRIED, J. 2015. Effects of age, gender and occupation on perceived workplace learning support. *International Journal of Training Research,* 13**,** 64-81.

ILLERIS, K. 2010. *The fundamentals of workplace learning: Understanding how people learn in working life*, Routledge.

KÅHLIN, I., KJELLBERG, A. & HAGBERG, J.-E. 2015. Staff experiences of participation in everyday life of older people with intellectual disability who live in group homes. *Scandinavian Journal of Disability Research,* 17**,** 335-352.

LUNDSTRÖM, M., ÅSTRÖM, S. & GRANEHEIM, U. H. 2007. Caregivers' experiences of exposure to violence in services for people with learning disabilities. *Journal of Psychiatric and Mental Health Nursing,* 14**,** 338-345.

MALONEY, S., HAAS, R., KEATING, J. L., MOLLOY, E., JOLLY, B., SIMS, J., MORGAN, P. & HAINES, T. 2011. Effectiveness of Web-based versus face-to-face delivery of education in prescription of falls-prevention exercise to health professionals: randomized trial. *Journal of medical Internet research,* 13**,** e116.

PANICKER, A. S. & RAMESH, S. 2019. Psychological status and coping styles of caregivers of individuals with intellectual disability and psychiatric illness. *Journal of Applied Research in Intellectual Disabilities,* 32**,** 1-14.

PUSA, S., DORELL, Å., ERLINGSSON, C., ANTONSSON, H., BRÄNNSTRÖM, M. & SUNDIN, K. 2019. Nurses' perceptions about a web-based learning intervention concerning supportive family conversations in home health care. *Journal of clinical nursing,* 28**,** 1314-1326.

SMYTH, E., HEALY, O. & LYDON, S. 2015. An analysis of stress, burnout, and work commitment among disability support staff in the UK. *Research in developmental disabilities,* 47**,** 297-305.

SWEDISH ASSOCIATION OF LOCAL AUTHORITIES AND REGIONS 2020. Bättre hälsa för personer med funktionsnedsättning.

SWEDISH NATIONAL BOARD OF HEALTH AND WELFARE 2018. Bostad med särskild service för vuxna enligt LSS.

SWEDISH NATIONAL BOARD OF HEALTH AND WELFARE 2020. Insatser och stöd till personer med funktionsnedsättning, lägesrapport 2020

Staff's self-reported frequency and management difficulty of challenging behavior among persons with intellectual disabilities in connection with web-based training

Anh Thuc Truong, *Department of Health Sciences, University West, Trollhättan, Sweden, anh.truong@hv.se*

Helena Antonsson, *Department of Health Sciences, University West, Trollhättan, Sweden; Department of Nursing, Umeå University, Umeå, Sweden*

Anette Ekström-Bergström, *Department of Health Sciences, University West, Trollhättan, Sweden; Department of Nursing and Reproductive, Perinatal and Sexual Health*

Catrin Johansson *Department of Health Sciences, University West, Trollhättan, Sweden*

*Corresponding author

Keywords: Health and social care services, healthy work environment, sustainable working life, work-integrated learning.

Abstract

Introduction: Healthcare professionals, nationally and internationally, experience that exposure to persons with intellectual disabilities (ID) during education is often insufficient. Professionals within the sector urge enhanced training that will better prepare them for working with their clients. Providing care and support to persons with ID is complex and places high demands on the professionals such as knowledge about ID and challenging behaviors (CB) as well as communication and interaction. Earlier studies have shown that knowledge deficiencies in these areas may prevent healthcare professionals from understanding their clients and their behaviors, particularly those behaviors considered to be challenging.

However, staff working with persons with ID reported CB as a problem they could not always address in the desired manner while performing their work duties. This predicament was shown to often generate stress, anger and powerlessness among staff, increasing the likelihood of burnout. Helping staff to better understand and be better prepared prior to meeting, communicating and interacting with persons with ID, especially concerning addressing CB, could therefore help to establish and maintain a healthy work environment and sustainable working life.

In this study, we investigated the impact of web-based training on the staff´s perception of the frequency and management difficulties of CB among persons with ID in residential settings in Sweden. The training addressed the topics ID and CB as well as communication and interaction and was offered to the staff working in the residences. Since the basic assumption was that CB is a consequence of interrupted communication and interaction between staff and persons with ID, we hypothesized that by introducing web-based training focusing on ID and CB as well as communication and interaction, the frequency of CB and degree of management difficulty of CB in daily care would be reduced.

Aim: To explore staff's perceptions about CB among clients with ID in residential settings before and after a web-based training program, specifically addressing ID and CB as well as communication and interaction.

Research questions
1. Do staff report a lower frequency of CB among clients with ID in residential settings after the web-based training?
2. Do staff report a lower degree of management difficulty of CB among clients with ID in residential settings after the web-based training?

Methods: A within-subjects study design was applied in which the participants were exposed to the treatment – in this case, web-based training – and measurements were made using the survey instrument "Checklist of Challenging Behavior" (CCB) before and after exposure to examine any potential changes that occurred.
Cluster sampling was conducted whereby 20 residential facilities were included. All staff in those residences were offered web-based training and invited to participate in this study.
A total of 212 participants accepted the invitation to the survey by filling in CCB and accordingly systematically rate the frequency of CB among the clients and the own difficulty in managing these behaviors as perceived by participating staff. The CCB includes 41 items related to topographies of aggressive and other CB divided along the dimensions of physical violence/aggressive behavior, property destruction, miscellaneous behavior and mental illness. The CCB was developed by Harris and Humphreys, who assessed the instrument's content validity and inter-rater reliability. The researchers concluded that the instrument was a reliable indicator of the presence or absence of CB. All measurements were based on five-point scale.

First, descriptive analysis was performed to summarize the characteristics of the sample. Central measurements were presented as the mean and dispersion by standard deviation. As the data were represented on an ordinal scale, the Wilcoxon signed-rank test was used to determine whether alterations existed between the responses before and after training concerning the frequency of CB and management difficulty of these behaviors.

Considering the number of calculations performed, a significance value of $p < 0.05$ was established. In addition, p-values < 0.1 were interpreted as tendencies. In order to contribute to indications of practical significance, a correlation coefficient r was calculated by converting the z-values, as described by Pautz and Olivier, of those sub-items with significant values. According to the rule of thumb for interpretation of Cohen's r: $0.1 =$ small effect size, $0.3 =$ medium effect size and $0.5 =$ large effect size.

Results: The demographic description revealed that, of those who provided information about their job type and level of education, approximately 87% worked as support assistants in the facilities, and most had completed secondary education. The analysis showed that, after training, staff self-reported a significantly lower degree of frequency on the dimension of property destruction, on the sub-item "damaging others' clothes, furniture, or other objects". Similarly, a significant difference was revealed in the dimension of mental illness. In addition, regarding the management difficulty of CB, the analysis revealed that, after training, staff self-reported a significantly lower degree of management difficulty on all sub-items on the dimension of property destruction. However, the effect sizes were considered small. Apart from that, the calculations also showed tendencies towards significance on a numbers of sub-items e.g biting, throwing things at people, breaking windows and absconding.

Discussions: The observed reduction in the frequency of CB after the web-based training may have been due to enhanced knowledge and understanding by staff of CB among their clients, which could have consequently led them to no longer consider these behaviors as challenging. In earlier research, it was found that the amount of knowledge possessed by staff could act as a significant predictor of their behavioral responses to CB. Accordingly, it is reasonable to suspect that the reduced management difficulty of CB as perceived by staff may have been due to their enhanced knowledge of such behaviors, which impacted their views and behavioral responses to CB.

Considering the formal education the majority of the staff have and the complexity of the job within this sector, it would be unreasonable to expect all of the staff to have the capability to perform all job duties without sufficient opportunities to expand their knowledge and improve their skills with the support of the relevant healthcare organization. This aspect has been equally emphasized to promote a healthy and sustainable workplace from the view of Work-Integrated Learning.

Conclusion: Considering the complexity of meeting the needs of persons with ID, in addition to job-specific knowledge, collaboration with multi-professional teams is also recommended. As such, routinely training to support Work-Integrated Learning should be offered to all professionals involved in caring for individuals with intellectual disabilities to reinforce social sustainability in the sector.

References

ANTONSSON, H., GRANEHEIM, U. H., ISAKSSON, U., ÅSTRÖM, S. & LUNDSTRÖM, M. O. 2016. Evaluation of a web-based training program for professional carers working with people with learning disabilities and challenging behavior: A pilot study with SSED-design. Issues in mental health nursing, 37, 734-743.

APPELGREN, M., BAHTSEVANI, C., PERSSON, K. & BORGLIN, G. 2018. Nurses' experiences of caring for patients with intellectual developmental disorders: a systematic review using a meta-ethnographic approach. BMC Nursing, 17, 51.

BOWRING, D. L., TOTSIKA, V., HASTINGS, R. P., TOOGOOD, S. & GRIFFITH, G. M. 2017. Challenging behaviours in adults with an intellectual disability: A total population study and exploration of risk indices. British Journal of Clinical Psychology, 56, 16-32.

CHUNG, M. C. & HARDING, C. 2009. Investigating Burnout and Psychological Well-Being of Staff Working with People with Intellectual Disabilities and Challenging Behaviour: The Role of Personality. Journal of Applied Research in Intellectual Disabilities, 22, 549-560.

COHEN, J. 1988. Statistical power analysis for the behavioral sciences, Hillsdale, L. Erlbaum Associates.

DALTON, C. & SWEENEY, J. 2013. Communication supports in residential services for people with an intellectual disability. British Journal of Learning Disabilities, 41, 22-30.

DIDI, A., DOWSE, L. & SMITH, L. 2018. Intellectual disability and complex support needs: human rights perspective for policy and practice. The International Journal of Human Rights, 22, 989-1006.

FLYNN, S., HASTINGS, R. P., GILLESPIE, D., MCNAMARA, R. & RANDELL, E. 2018. Is the amount of exposure to aggressive challenging behaviour related to staff work-related well-being in intellectual disability services? Evidence from a clustered research design. Research in Developmental Disabilities, 81, 155-161.

GÄDDMAN JOHANSSON, R. & HELLSTRÖM MUHLI, U. 2018. Developing Care Professionals: Changing Disability Services in Sweden. Professions and Professionalism, 8, e2017.

HARRIS, P., HUMPHREYS, J. & THOMSON, G. 1994. A CHECKLIST OF CHALLENGING BEHAVIOUR: THE DEVELOPMENT OF A SURVEY INSTRUMENT. Mental Handicap Research, 7, 118-133.

HARTMANN, C. W., MILLS, W. L., PIMENTEL, C. B., PALMER, J. A., ALLEN, R. S., ZHAO, S., WEWIORSKI, N. J., SULLIVAN, J. L., DILLON, K., CLARK, V., BERLOWITZ, D. R. & SNOW, A. L. 2018. Impact of Intervention to Improve Nursing Home Resident–Staff Interactions and Engagement. The Gerontologist, 58, e291-e301.

HEMM, C., DAGNAN, D. & MEYER, T. D. 2015. Identifying Training Needs for Mainstream Healthcare Professionals, to Prepare Them for Working with Individuals with Intellectual Disabilities: A Systematic Review. Journal of Applied Research in Intellectual Disabilities, 28, 98-110.

JUDD, M. J., DOROZENKO, K. P. & BREEN, L. J. 2017. Workplace stress, burnout and coping: a qualitative study of the experiences of Australian disability support workers. Health & Social Care in the Community, 25, 1109-1117.

KELLY, C. 2017. Care and violence through the lens of personal support workers. International Journal of Care and Caring, 1, 97-113.

M DOODY, C., MARKEY, K. & DOODY, O. 2013. The experiences of registered intellectual disability nurses caring for the older person with intellectual disability. Journal of Clinical Nursing, 22, 1112-1123.

MCCRUM-GARDNER, E. 2008. Which is the correct statistical test to use? British Journal of Oral and Maxillofacial Surgery, 46, 38-41.

OLSSON, S. & GUSTAFSSON, C. 2020. Employees' experiences of education and knowledge in intellectual disability practice. Journal of Policy and Practice in Intellectual Disabilities, 17, 219-231.

PAUTZ, N., OLIVIER, B. & STEYN, F. 2018. The use of nonparametric effect sizes in single study musculoskeletal physiotherapy research: A practical primer. Physical Therapy in Sport, 33, 117-124.

RYAN, C., BERGIN, M. & WELLS, J. S. G. 2019. Work-related stress and well-being of direct care workers in intellectual disability services: a scoping review of the literature. International Journal of Developmental Disabilities, 67, 1-22.

TRUONG, A., ALVERBRATT, C., EKSTRÖM-BERGSTRÖM, A. & ANTONSSON, H. 2021. Caring for Persons With Intellectual Disabilities and Challenging Behavior: Staff Experiences With a Web-Based Training Program. Frontiers in Psychiatry, 12.

VAN DER MEER, L., MATTHEWS, T., OGILVIE, E., BERRY, A., WADDINGTON, H., BALANDIN, S., O'REILLY, M. F., LANCIONI, G. & SIGAFOOS, J. 2017. Training direct-care staff to provide communication intervention to adults with intellectual disability: A systematic review. American journal of speech-language pathology, 26, 1279-1295.

WEISE, J. & TROLLOR, J. N. 2018. Preparedness and training needs of an Australian public mental health workforce in intellectual disability mental health. Journal of Intellectual & Developmental Disability, 43, 431-440.

Can Work Integrated Learning (WIL) be Implemented in the Social Sciences? Reflections on a Nascent WIL Programme at the Political Studies Department, University of the Western Cape.

Prof Cherrel Africa, *Political Studies Department, University of the Western Cape,* cjafrica@uwc.ac.za

Dr Jonathan Mark *Hoskins, Political Studies Department, University of the Western Cape,* mhoskins@uwc.ac.za

Ms Meshay Moses, *Political Studies Department, University of the Western Cape,* mlmoses@uwc.ac.za

Ms Michaelyn Cornelius, *Political Studies Department, University of the Western Cape,* 3969063@myuwc.ac.za

Abstract:

There is a wealth of literature and research on the benefits of Work Integrated Learning (WIL) and the possibilities that it presents in tackling the increasingly complex economic and social challenges faced by contemporary societies. In South Africa the consequences of socio-economic disparities between people and societies are multifaceted given its triple challenge of unemployment, poverty and inequality. Statistics reveal that unemployment is a longstanding problem in South Africa - it is a constant challenge. Linked to this is that youth unemployment is currently very high with an unemployment rate of 63.9% among 15 to 24 years and 42% for those between the age of 25 and 35. It is important to highlight that the high rate of unemployment among the youth also applies to university graduates who fall in this segment. Indeed, commentators have argued that unemployment will not be addressed in South Africa anytime in the near future, which means that graduates will continue to be challenged with low employment prospects. This becomes critically important given the social and economic impact of unemployment as well as the investment that young graduates make in securing an education at a tertiary institution. It is a fact that struggling to find work can be demoralizing for them. For this reason, they could potentially become discouraged work seekers leading to further societal problem. An additional factor in the South African context is race and the legacy of apartheid. When the unemployment statistics are examined by race the picture that emerges is a racialized one with the group classified as black being hardest hit. Against this backdrop, we review the literature on the challenges facing graduates in their attempt to secure employment which show that a lack of networks and work experience hamper prospects of being gainfully employed. However, this has typically been implemented in disciplines such as Education and the Health Sciences. Building a fully-fledged WIL programme in traditional university departments such as Political Studies is a challenging prospect. In light of the above context, this article seeks to investigate whether WIL as a bridging mechanism, which is located between the theoretically-based orientation of particular disciplines (such as Political Studies) and practical demands of the workplace, can assist in enhancing graduate employability in a discipline such as Political Studies. At the core of WIL is its approach of integrating theoretical knowledge in the classroom with practical knowledge in the workplace. The relationship between work and learning is becoming increasingly important as a society in transition requires "seamless" integration between the challenges of working life and lifelong learning. Additionally, to implement WIL in practice requires cross-sectoral collaboration between actors and institutions. Drawing on the experiences of the Political Studies Department at the University of the Western Cape, the question addressed in this article is whether WIL, by integrating theoretical knowledge in the university with practical knowledge in the workplace, can successfully prepare Social Science graduates to be gainfully employed. We find that Masters students employed as interns through the departments relationships with Non-Governmental Organisations such as the Catholic Parliamentary Liaison Office (CPLO), the Development Action Group (DAG) and advocacy organisation Black Sash, were more successful in finding employment and developing a career path after having spent time at these organisations. On reflection, and through the insights provided by the beneficiaries of these opportunities, it becomes apparent that the success of these students in their careers was founded on having been exposed to "some form of WIL" via the department, although it was not a fully-fledged formally constituted WIL programme. It is the success of these associations that lead us to believe that ultimately this co-creation and strengthening of knowledge and learning can indeed occur in disciplines such as Political Studies and can assist in equipping graduates with a real-world work experience and opportunities. This leads to the question: What theory and practice of WIL is needed in this context? Given the successes of the Political Studies Department, it is argued that formally-constituted WIL programmes in conjunction with rigorous research-based internship programmes can be implemented in the Social Sciences. Finally, we argue that alongside such WIL programmes, a WIL teaching orientation through WIL-infused curricula and assessment practices should be considered to empower and equip a broader spectrum of graduates given the challenges facing the country.

Co-creating Work Integrated Learning Approaches through International Partnership - Collaborative Education & Research for Societal Development

Associate Professor Fredrik Sunnemark*,
University West, Sweden
Email: fredrik.sunnemark@hv.se

Dr Henri Jacobs, *Central University of Technology, Free State, South Africa*
Email: hjacobs@cut.ac.za

Professor Per Assmo, U*niversity West, Sweden* ,
Email: per.assmo@hv.se

*Corresponding author

Keywords: Work Integrated Learning, Internationalisation, Employability, Partnership, Education, Research, Societal development

Extended abstract

This paper explores and analyse the evolvement and outcome of formal international partnership between University West (UW) in Sweden and Central University of Technology (CUT), South Africa. The collaboration was initiated in 2017, based on a mutual interest in the field of Work Integrated Learning (WIL). The differences in the universities' views, policies and strategies of WIL in research and education was seen as a strength, where the universities, through international collaboration, could learn from each other to foster further knowledge, skills and practices to develop the field of WIL in higher education and research.

This study explores how an international university partnership aims to develop and integrate WIL a research and education approach to enhance societal development. The paper introduces a conceptual framework focusing on views and policies of internationalisation, connected to views and perspectives of WIL. The paper thereafter explores and analyse how an international collaboration is used to enhance and improve the different forms and approaches of WIL at the respective university.

UW and CUT comes with different history, perspectives, and strategies of WIL. The institutions recognised different strength, weaknesses and focus of WIL, which was seen as an important starting point and cornerstone for a partnership to learn from each other, and jointly develop WIL in higher education and research. In connection, the partnership aimed to further develop WIL as a new academic field, focusing on applied research approaches and strategies, together with and for societal actors, adress real societal challenges.

The partnership has been instrumental in creating opportunities to discuss and analyse the concept and application of various forms of WIL that through a close collaboration strives to overcome challenges and provide opportunities for development to the benefit of society at large. In short, the partnership has sparked various developments of WIL in higher education and research, including PhD student from CUT to be enrolled in the WIL doctoral at UW. Collaboration through an international master's programme in WIL, will enable students from CUT and UW to study together. Through networks with industry and organisations in the respective country, internship placements is another WIL component being planned for undergraduate- and postgraduate students from both universities. Researcher from UW and CUT has initiated several research ventures and are co-publishing research outputs with a distinct WIL profile. In all, the collaborative partnership has enhanced the integration and development of, from local to international level, improving the outcome for students, researchers, and society. The partnership includes several important components, with definite possibilities for further development.

Students from CUT are enrolled in the doctoral programme in WIL at UW, providing relevant WIL research and PhD staff in WIL at CUT. This helps to make inroads into establishing WIL as an independent research field of its own in the South African context and to possibly further international networks. It also helps to develop WIL as a research field at UW by adding South African perspectives and experiences.

The collaboration of the master's programme in WIL, offered by UW, will enable students from CUT to apply and enrol in a post-graduate WIL education and degree, without moving across the globe, hence providing a more inclusive approach to higher education, connected to the local society. Also here, WIL can be further developed by international experiences adding perspectives to both the Swedish and South African context. This both as an educational philosophy and structure as well as a field of study. Internships that are local in practice have the possibility of being global in scope through being part of an extended network, and thereby develop ways of studying WIL-processes that further strengthens WIL as an independent field of study.

Under- and postgraduate students from UW can, through the established formal structure at CUT, conduct internship placements in South Africa. A long-term sustainable collaboration between the institutions creates a

foundation for opening for work and practice placement for students from all faculties, wanting to further their study period with international experiences and learning in and from working life in another context than their usual.

Researchers from UW and CUT has initiated several research ventures and are co-publishing research outputs with a distinct WIL profile. By connecting this to extended personal and professional research networks, the independent field of study can be further stabilised, and not least grow in the South African context.

The collaboration has also strengthened the WIL profile and branding of the respective university, nationally as well as internationally. As an example, the universities are planning to co-host an international WIL conference in South Africa during 2024.

Critical exploration of researchers' experiences within the field of participatory research

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Anna Chalachanová*, PhD, *VID Specialized University, anna.chalachanova@vid.no*

Inger Marie Lid, Professor, *VID Specialized University, inger.lid@vid.no*

Kristina Areskoug Josefsson, Professor, University West, Faculty of health sciences, Trollhättan, Sweden, Jönköping University, School of Health and Welfare, Jönköping, Sweden, Oslo Metropolitan University, Department of Behavioural Science, Oslo, Norway, kristaj@oslomet.no, kriare@hv.se

Anne Linn Midttun, PhD scholar, *VID Specialized University, anne.midttun@vid.no*

Peter Paluga, university lecturer, *VID Specialized University, peter.paluga@vid.no*

*Corresponding author

Keywords: Participatory action research, autoethnography,

Extended abstract:

Research question: Autoethnographic critical scrutiny as a step towards more inclusive research practices in participatory research?

In this presentation we would like to discuss a paper draft. The paper examines the autoethnographic accounts of four researchers to highlight and critically explore our experiences within the participatory action research (PAR) (Schubotz, 2020). PAR is based on the principles of close co-operation between researchers and participants with experience-based knowledge, in this case people with disabilities. Hancock et al. (2012) define three justifications for the participation of people with experience-based competence in research: the ethical, the qualitative and the "therapeutic". The recipients of health and welfare services should have a voice in research in areas that will have a direct impact on their life situation. The qualitative aspect concerns that people with experience-based knowledge can strengthen the quality of the research with new approaches by asking relevant questions or by recruiting participants. This can strengthen the research's relevance, validity and focus on the development of knowledge relevant to those concerned. The third rationale is the therapeutic or empowerment rationale, i.e., that the research can have a positive impact on people who receive services and who are involved in the research (Askheim et al., 2019; Hancock et al., 2012). PAR is connected to democratic values, co-creation of knowledge and the believe that this form of co-operation can influence practice. Participatory action research creates space to develop new research communities where the researcher and the researcher's agenda are pushed aside to create space for the research community that develops as a result of interaction between researchers and participants with different backgrounds (experiences) (Nind, 2014 a; Northway, 2010). PAR is a context-bound research that is most often based on dialogue-based collaboration, and which aims to develop new knowledge or insight that can primarily be recognized in the context in which it takes place (Levin, 2017). It should also be based on local challenges that participants in the research encounter in their everyday lives (Lawson et al., 2015). Collaboration with people with experience-based knowledge in research can be the key to creating opportunities to co-create an inclusive democratic society. All the authors have been doing PAR in different research projects. In various academic meetings, we often discussed methodological approaches, our research role, things not working as expected, or when we felt unsure of whether or what we were doing was right or wrong. This paper will try to bring to light and exemplify some of the tensions and challenges we have met in our research practice with PAR. Based on four autoethnographic accounts and theory on autoethnography as a background, the article will reflect upon, critically analyze, and discuss researchers' roles, power, and epistemic privileges in PAR. The autoethnographic approach is based on the researcher's reflections and critical examination of their identities, roles, power, or penalties within one or several cultural contexts (Hughes & Pennington, 2016). It is a critical reflexive action research in which the researcher takes an active, scientific, and systematic view of personal experience concerning cultural groups identified by the researcher as similar to the self (i.e., us) or as others who differ from the self (i.e., them) (Hughes & Pennington, 2016, s.8).

Establishing data:

Four of us wrote two reflections each containing autoethnographic thoughts that reflected tensions in our research practice, for example challenging privileged academic discourses or traditional researcher roles. The logs had roughly the following structure: describe the setting (where, when, why) and your reflections/tensions. Then we read all the logs and wrote down our reactions, keywords, and reflections based on our own research experience. We wrote whether the examples sounded familiar or whether they were unfamiliar or differed from our experiences. All researchers presented the reflections they had written based on the logs, and we summarized central themes based on all the logs.

By reading the other authors reflections and at the same time reflecting on their texts using our own experience and taking notes, writing keywords to their texts, started the analysis process in familiarizing with the data (Braun & Clarke, 2014). The analysis was conducted by summarizing the material through the active process of identifying similar themes in the texts, using all the keywords and reflections (Braun & Clarke, 2014). The main themes identified so far were power and power (in)balance, researcher's role, and epistemic privileges in PAR. Next, we discussed these themes, scrutinizing structures and processes that can influence the research or unconscious processes and power relations tipping the research in one particular direction (Alvesson & Sköldberg, 1994, 2017).

Reflections so far

The autoethnographic texts touch upon power and power balance in relationships between researchers and participants with experience-based knowledge. The power connects to decision-making for example who is making decisions, what kind of cooperation and co-production of knowledge is happening, and how deadlines sets premises for collaboration. The topic of power may be described on a micro level, what the researchers intend to do in the meetings but may also be connected to the framework of the research projects such as projects goals and progression within the project. Projects depend on a certain pace and effectiveness to fulfil the goals. This has to do with financing and funds that can run out. This effectiveness might be challenging when we do research with people with experience-based knowledge, especially if there is a gap between researchers' starting position, theoretical background and expectations, and co-researchers' needs, interests, or expectations. Although researchers are aware of their power and try to adapt the process so that co-researchers can experience a real contribution, it might seem that the researchers have the final word in the end, and we should discuss whether and how we should address that. Co-researchers must usually adjust to the academic world rather than vice versa.

We have to acknowledge the power imbalance but also critically explore research practices so that we can create a research environment built on the values of equality and inclusion. We believe that critical scrutiny of our research practices is an essential step toward more inclusive approaches in the research and development of our communities.

References

Alvesson, M., & Sköldberg, K. (1994). *Tolkning och reflektion : vetenskapsfilosofi och kvalitativ metod*. Lund: Studentlitteratur.

Alvesson, M., & Sköldberg, K. (2017). *Reflexive methodology : new vistas for qualitative research* (Third edition. ed.): SAGE.

Askheim, O. P., Lid, I. M., & Østensjø, S. (2019). *Samproduksjon i forskning : forskning med nye aktører*. Oslo: Universitetsforl.

Braun, V., & Clarke, V. (2014). *Successful qualitative research,*

a practical guide for beginners. London: SAGE.

Hancock, N., Bundy, A., Tamsett, S., & McMahon, M. (2012). Participation of mental health consumers in research: training addressed and reliability assessed. *Australian Occupational Therapy Journal*.

Hughes, S. A., & Pennington, J. L. (2016). *Autoethnography: Process, product, and possibility for critical social research*: Sage Publications.

Lawson, H. A. (2015). *Participatory action research* (First edition. ed.).

Levin, M. (2017). Aksjonsforskning som forskning-epistomologiske og metodiske utfordringer. In *Gjøtterud, Hiim, Husebø, Jensen, Steen-Olsen and Stjernstrøm (eds.) Aksjonsforskning i Norge: Teoretisk og empirisk mangfold* (pp. 27-45).

Nind. (2014 a). *What is inclusive research?* . London Bloomsbury Academic

Northway, R. (2010). Participatory research. Part 1: key features and underlying philosophy. *International Journal of Therapy and Rehabilitation, 17*(4), 174-179.

Schubotz, D. (2020). *Participatory research.*

Why and how to involve people in research. London: SAGE.

Learning to become change agents through international collaboration: insights and challenges from the Global Classroom Initiative

Professor Laurence Piper*, SOS, Avdelning för samhällsbyggnad och samhällsutveckling University West, Sweden. Laurence.Piper@hv.se

Professor Bettina Von Lieres, Department of Global Development Studies, University of Toronto Scarborough, Canada. bettina.vonlieres@utoronto.ca

*Corresponding author
Keywords: WIL, international collaboration, global classroom, change agent, design theory, democratic citizenship, sustainability

Abstract

This paper engages with the ambition of some forms of work-integrated learning (WIL) programmes to produce graduates who are not just well equipped for the world of work, but who are also capable of being change agents to bring about a more sustainable and democratic world. More specifically, we explore an innovative pedagogic practice termed the 'Global Classroom Initiative' (GCI) that has been piloted between colleagues at the University of Toronto, Canada, University West, Sweden, and in various iterations, the University of Stellenbosch, and the University of the Western Cape in South Africa. The key focus of the paper is on the impact of the GCI experience on the disposition of participants to act as democratic citizens. In exploring this research problem, the paper draws on the views of participating students, facilitators, and the organising team over three iterations of the GCI. Our initial findings are that the GCI has a significant and even profound impact on participants express desire to act for sustainability, but it is unclear how enduring this view may be, and whether our findings are impacted by the self-selection into the programme of students already inclined to be activists.

The mainstream approach to WIL is a pedagogic one where students learn both through traditional teaching and practical doing, and this learning occurs both at the university and in the workplace, to better prepare graduates for working life. However, a great variety of WIL approaches exist, and some, such as at University West (Högskolan Väst) in Sweden, include the ambition to produce graduates who are better prepared for life in general, and who are empowered to be change agents for a more sustainable and democratic world (Sunnemark et al 2022: forthcoming). Thus, the WIL process is orientated both to producing new kinds of knowledge but also a new kind of knower. This knower may even be deeply critical of the status quo and desire to bring about a more just world (Piper et al 2022: forthcoming).

In the context of this framing of WIL at University West as committed to producing graduates who are change agents for democracy and sustainability, over the last 18months we have been experimenting with the 'Global Classroom Initiative' (GCI). While the concept of a global classroom long exists in American secondary schooling where it is associated with the Model UN programme (UN 2008) and has also been used at post-secondary level as a space for international engagement between University students around research (see https://globalmaryland.umd.edu/content/welcome-global-classrooms), the approach adopted in the GCI is distinctive. Thus, while it is international like many other versions, and it happens online, as most other versions do, it is also explicitly conceived as a space orientated to inspiring active citizenship – agency – among the participants, who must collaborate around a tangible project as the outcome of the engagement. Furthermore, it is underwritten by a normative commitment to sustainability and democracy too, and thus is well-suited to express desire by Högskolan Väst that WIL graduates become change agents for these social goods. Indeed, a key feature of the design of the GCI is that it follows a design theory model that is deliberately horizontal and participatory (Manzini 2015). Thus, while the process of the GCIs is design and facilitated, and do include some background academic reading, academic staff do not participate. Rather there is some input from various civil society organizations or activists to give examples of the kind of work they do, and then it is up to the participants, working in teams, to frame the problem as they see fit, and design a practical project to address it, one that they can implement where they live. Thus, the focus is on ownership of the whole process by participants, and the generation of an actionable outcome.

The paper reflects on the experiences of two GCIs conducted to date, and whether they do contribute to making graduates change agents. To this end, we draw on the views of participants, especially the students who have been through the process, but also the facilitator team and supporting academic staff. While our findings are largely positive there are two major caveats: first it is hard to judge how enduring the commitment to being a change agent

is, especially in a world of work that does not necessarily support it. Second, to date the recruitment for our GCI events has been through voluntary and open calls. So, we cannot rule out that we students already likely to be change agents self-select into the events. Going forward however, we are institutionalising the GCI as part of a module at University West, and this should provide a more robust test of the innovation.

References

Manzini, E., 2015. *Design, when everybody designs: An introduction to design for social innovation*. MIT press.

Piper, Laurence, Karl Dahlquist, Fredrik Sunnemark and Per Assmo. 'Rethinking WIL for an Academic Discipline: Theoretical insights from Work Integrated Political Studies (WIPS)' to send me for the literature review. (Under review)

Sunnemark Ludvig, Fredrik Sunnemark, Laurence Piper, Karl Dahlquist, Emil Gahnström & Per Assmo: Bridging Theory and Practice through Work-Integrated Learning (WIL): The Conceptualisations of WIL at a University in Sweden" (Under Review)

UN (United Nations). 2008. 'About Global Classrooms', https://web.archive.org/web/20100626002910/http://www.unausa.org/globalclassrooms/aboutus

Using Reflective Diaries for assessing personal and professional identity evolvement during transdisciplinarity

Marca V.C. Wolfensberger*, *Hanze UAS, the Netherlands & Avans UAS, the Netherlands, Wolfensberger mvc.wolfensberger@avans.nl*

Nik Waldram, *Utrecht University & Hanze UAS, the Netherlands*

Roya Shokoohi, *Hanze UAS, the Netherlands*

Branko Anđić, *Johannes Johannes Kepler University Linz, Austria*

*Corresponding author

Keywords: Reflective Diaries, WIL, STEAM+, transdisciplinary, formative assessment, Education Innovation Lab, talent development, co-creation

Research in the STEAM+ project:

This paper aims to develop a reasonable way assessing effects of transdisciplinary experiences related to teaching and learning on personal and/or professional identity when collaborating with different stakeholders, international and interdisciplinary, using reflective learning. The main research question is :

"What are the effects on personal and/or professional identity when collaborating with different stakeholders (international and interdisciplinary) while thinking about transdisciplinary teaching & learning?"

The research is related to the European STEAM+ project - www.steamtalent.eu - a collaboration between nine countries each represented by one university and one policymaker institution aiming to create transdisciplinary co-creation instruments for transdisciplinary programs in higher education. Key elements of the project are transdisciplinarity, co-creation, and talent development pedagogies (Wolfensberger, 2012). Research is done in one week-long STEAM+ Innovation Labs, where students, teachers, experts and social actors collaborate in a transdisciplinary environment. During the lab at the Johannes Kepler University Linz Austria, May 2022, reflective diaries (RD) have been employed as a method to help participants reflect on their Lab-learning process. We collected data from 25 diaries and 11 interviews.

Reflective Diaries in research

Transdisciplinarity is defined as the integration of academic researchers from unrelated disciplines and non-academic participants in creating new knowledge and theory to achieve a common goal (OECD 2020). It is said to have effects on the personal and professional identity of the participants. To assess this, we introduce RD.

RD are a formative assessment tool that can teach students to recognize cognitive strategies and metacognitive skills they need to fulfill goals (Alabidi, Owais, Alabidi, & Taani, 2022). More specifically, RD are used to formative asses the Self-Regulated Learning of students, a sustainable learning process that supports essential Lifelong Learning skills (Taranto & Buchanan, 2020).

Providing feedback is key in Self-Regulated Learning, but the extent to which common feedback practices in higher education are effective is questioned (Bailey & Garner, 2010). RD helps teachers to design individualized feedback, by getting insights in the epistemological beliefs of students. The activity of filling out RD is already part of the feedback loop and helps students focus (Wallin & Adawi, 2018). Furthermore, Lizzio & Wilson (2007) conclude that students in their research experienced working in a self-managed workbook as efficient and psychologically safe process.

The usefulness of RD has been shown in a much broader scope than reflective learning for higher education students. Xu (2018) used RD to analyse the self-formation of cross-cultural adaption of international PhD students. A quite extensive body of research exists for the use of RD as a reflection method in the healthcare sector, both for students and professionals (Raw, Bridgen & Gupta, 2012; Poddar, 2013). Also, in teacher education for both future as already professional teachers, RD proved to be an effective and recourses efficient educational device (Leshem & Trafford, 2006).

RD are typically written reflections but can contain visual elements (Barromi Perlman, 2016). A disadvantage of RD to collect data is high dropout and irregular use during the project (Ukrop, Svabensky & Nehyba, 2019).

Method

During the STEAM+ lab, a mixed group of students and teachers came together to design solutions for societal challenges using creativity and technology. Participants were asked to report on their experiences through RD. At the end of each day, respondents filled out a Google Forms document asking questions about the lab and their collaborations with others.

The diaries were structured with specific questions for each day, which had to stimulate reflections on the experience of the activities and the role this played in their own understanding of their skills, abilities and professional/personal identities. Questions were partly adopted from previous studies (Fortuin, Oonk & Gulikers, 2022) and different for the students and teachers.

To follow up on the diaries, interviews were held with 11 respondents. The interviews were done through and transcribed by Microsoft Teams. Interviewees gave their opinions on transdisciplinary collaboration on the lab and suggestions to improve transdisciplinary collaboration.

The outcome of the data consists of diary entries from 15 students and 10 teachers and interviews with 11 respondents. The identity of the respondents has remained anonymous, as fake names were used. The data is analyzed using Nvivo. Three researchers coded the texts independently. When differences in coding were found they discussed and found a consensus. The analyses are not finalized yet.

Preliminary Results

Respondents elaborated mostly on their collaboration experiences and the organization of the lab. Improvements and limitations for the lab have been mentioned more than twice as often as positive lab experiences. On the other hand, respondents mentioned mainly positive collaboration experiences. Experienced cultural differences are mentioned three times more often than experiences of disciplinary differences and six times more often than teacher-student differences.

Another commonly mentioned topic was "(re)consider perspectives", referring to situations where a certain perspective was used or questioned by oneself or other lab participants. Only 8 of the 99 times that the code was used, respondents stated that the other perspectives were directly relevant for accomplishing the assignment. (Re)considering perspectives appeared in discussions about other topics including ways of collaboration, work ethics, and student life in participants' home countries. Many participants indicated that this led to new insights into discussed themes.

Respondents also commented on the format of RD. They commonly stated that the closed diary questions were too restrictive and not always applicable. There was a wish for more space to write freely about experiences and sometimes use other forms then writing, e.g. drawing or choosing pictures. Additionally, participants say that filling out RD in the evening was a challenge. Multiple participants suggest that having reflection moments throughout the day would be helpful.

Conclusions

For many participants of the STEAM+-lab, the international collaboration led to (re)considering of perspectives and new insights. Effects of the multidisciplinary collaboration on personal and professional development of the participants are also apparent, although in a slightly less extent. A big part of the learning that the respondents experienced, wasn't directly related to challenges arising directly from the assignment but rather to the whole collaboration and intercultural exchanges. Professors Grit Hanze UAS and Wolfensberger projectleader from STEAM+ can use these results to promote WIL in the STEAM+ and other projects.

There seems to be a gap between the potential of RD to research the epistemological beliefs of students (Wallin & Adawi, 2018) and the actual implementation in this project, which was commonly experienced as frustrating by participants. As with other case studies (Ukrop et al., 2019) this led to dropouts in users and a strong wish for adjustments. For further use of RD in researching the personal and professional experiences of project participants, we recommend creating less restricted diary formats and providing time for filling out the questionnaires.

Reference List

Alabidi, S., Owais, A., Alabidi, F., & Taani, O. (2022). Exploring the Role of Reflective Diaries as a Formative Assessment Strategy in Promoting Self-Regulated Learning Among ESL Students. *Practical Assessment, Research, and Evaluation*, Vol. 27, Article 19.

Bailey, R. & Garner, M. (2010). Is the Feedback in Higher Education Assessment Worth the Paper It Is Written on? Teachers "Reflections on Their Practices". *Teaching in Higher Education*, 15 (2), 187-198.

Barromi Perlman, E. (2016). Using Visual Reflective Diaries of Photographs of School Buildings as a Tool for Empowering Students in Teacher Training. International Journal of Qualitative Methods. Januari-December 2016, pp. 1-15

Fortuin, K., Oonk, C., & Gulikers, J. (2022). Rubric Boundary Crossing to support inter- and transdisciplinary learning in an intercultural setting [Rubric], Wageningen University.

Leshem, S., & Trafford, V.N. (2006). Stories as mirrors: reflective practice in teaching and learning. Reflective practice, 7 (1), 9-27.

Lizzio, A., & Wilson, K. (2007). Developing critical professional judgement: the efficacy of a self-managed reflective process. *Studies in Continuing Education, 27* (3), 277-293.

OECD report (2020). Addressing Societal Challenges Using Transdisciplinary Research. OECD Science, Technology and Industry Policy Papers, 88.

Poddar, R. (2013). Learning between managers and doctors. British Journal of Healthcare Management, 19 (4), pp unknown.

Raw, J., Brigden, D. & Gupta, R. (2005) Reflective diaries in medical practice. Reflective Practice, 6 (1), 165-169.

Taranto, D., & Buchanan, M.T. (2020). Sustaining Lifelong Leaning: A Self-Regulated Learning (SLR) approach. *Discourse and Communication for Sustainable Education, 11* (1), 5-15.

Ukrop, M., Švábenský, V., & Nehyba, J. (2019, February). Reflective diary for professional development of novice teachers. *Proceedings of the 50th ACM technical symposium on computer science education*, pp. 1088-1094.

Wallin, P., & Adawi, T. (2018). The reflective diary as a method for the formative assessment of self-regulated learning. European Journal of Engineering Education, 43(4), 507-521.

Wolfensberger, M.V.C. (2012). *Teaching for Excellence: Honors Pedagogies Revealed*. Münster: Waxmann Verlag GmbH.

Learning from co-creating an online, flexible distance course in co-production in health and welfare

Masterson, D*, *Jönköping Academy for Improvement of health and welfare, Jönköping University, Sweden, daniel.masterson@ju.se*

Areskoug Josefsson, K, *Jönköping Academy for Improvement of health and welfare, Jönköping University, Sweden; Department of Health Sciences, University West, Trollhättan, Sweden; Department of Behavioural Science, Oslo Metropolitan University, Oslo, Norway*

*Corresponding author

Background

Co-creation and shared learning between actors and institutions on all levels of society are important for an inclusive society. In order to realise the potential of these participatory concepts in society, there is a requirement to improve reporting and evaluation of the activities involved (Slattery, Saeri & Bragge, 2020). This suggests a need for guidance on how to apply co-creation and related concepts in practice. Work-integrated learning provides an opportunity for learning within higher education to be applied directly into a relevant context, and to problematize the relation between practical and theoretical knowledge of co-production. Learning integrated in the students' present or future workplace can be built on practical tasks and work situations to meet needs in practice (Hattinger et al., 2014).The purpose of this paper is to report learning and the pedagogical underpinning, co-creation and evaluation of a flexible distance course which is integrated into the working life of the students. The Co-production in Health and Welfare course is available as free-standing, English, online distance course held at Jönköping University and available to all international students. The course is offered both as a part-time course (7.5 ECTS credits) a full-time course. With each course, we have co-produced with students and patient and public contributors which has improved the learning journey.

Method

This discussion paper is based on our own experiences from a selected case of co-creation, supported by literature and pedagogical theories incorporating pedagogy from cognitive behaviourist, social constructivist and connectivist perspectives. Through this reflection, we explain how co-creation with students takes place, how dialogue is encouraged, how this is documented, co-refined and how agreement is reached. The co-creation of course content survey and frequent feedback survey which have been used to co-create and co-evaluate the course are presented.

Co-creation of a learning community

As noted by Keller & Hrastinski (2009), a key challenge of online education is to "create an interactive context, a learning community, with appropriate levels of social presence, providing higher-order learning" (Keller & Hrastinski, 2009, p104). During each course, we set out to create a Community of Inquiry (Garrison, 2007). This framework identifies three factors which interconnect to form the student's educational experience of a given course. These include the cognitive presence; the teaching presence; and the social presence. These were achieved through a practical and applied group assignment which is encouraged to be applied to their workplace and professional background. In their group assignment, students consider a specific context and issue relevant to their work. In collaboration with their student group, patient public contributors and the course facilitator, students co-produce a tool to be applied on a specific issue within an applied setting. By the end of the course, not only do students complete their learning objectives, but they also have a co-produced resource to take with them into practice. Through their experience of co-producing, students reflect on the process and consider areas for their professional and personal development in future.

To ensure that we 'practice what we preach', each course is co-created with those who were about to embark upon this learning journey. Students co-produce their learning journey via a 'co-creating course content survey' to gain an understanding of how students want to engage with the course. This is followed by interactive dialogue in the first live session to refine the learning journey, clarify the objectives and establish the ways of working with students, teachers and patient and public contributors. This is an essential step as without this dialogue, the learning content of the course may not match the students' needs which can lead to lack of motivation and consequently surface learning (Winefield, 2004).

Co-evaluation

To promote interaction between students and the course lead within this distance course, there were a number of tools employed in addition to a traditional course evaluation. There was an open discussion forum (co-production café), two dedicated discussions for the group assignment and reflective assignment and a 'thought board' within the student digital whiteboard. The 'frequent feedback' survey is live throughout the course and encouraged to be completed at the end of each topic and live event. This provides an opportunity for continuous dialogue with students and allows us to respond to students needs as they develop and within the timescales of the course. At the start of each session, any thoughts, concerns or issues from students or the wider learning community are added to a 'thought board'. These are reviewed and agreed when to be discussed (at the start/end of each live session, or to be discussed asynchronously within the co-production café.

Findings

Through applying the Community of Inquiry framework (Garrison, 2007) and frequent feedback, we have been able to highlight the interconnecting elements of the course design and establish which elements of the course have worked well in forming a positive educational experience and identify areas which required improvement. The vast majority of students rated their experience with the course positively and we see improvements in perceived understanding of co-production during the course. The majority of positive feedback related to *opportunities for engagement and interaction within the course,* the *flexible course structure* and *course content*. Recommendations for improvement related to *navigation in canvas*, *more interactive discussions*, *less reading material* and *clearer communication on upcoming activities*. The learning presented is relevant to application of theories of work-integrated learning, collaborative learning and distance learning pedagogics. Two practical tools are provided for those interested in co-creating courses to apply and build upon, with examples of how to apply these in practice.

Conclusion

This case study highlights the elements of the course design which promoted a positive educational experience through co-creation with students and provides tools for application of co-creation of courses in practice. Co-creating curriculum enhances work-integrated learning, but demands adaptation to novel roles from teachers in higher education. It is hoped that these reflections prvoides guidance and tools for these adaptations to take place. Our focus for quality improvement in future will be co-evaluating the 'learning community' with students and patient and public contributors.

References

ANDERSON, T. & DRON, J. 2011. Three generations of distance education pedagogy. The *International Review of Research in Open and Distributed Learning,* 12, 80-97.

BICKLE, M. & RUCKER, R. 2021. Stumbling Made Me a Better Online Instructor 13 Tips Toward Quality Improvement. *Distance Learning,* 18, 14-22.

BIGGS, J. B. & MOORE, P. J. 1993. *The Process of Learning*, Sydney, Prentice Hall.

BONK, C.J. AND GRAHAM, C.R., 2012. *The handbook of blended learning: Global perspectives, local designs.* John Wiley & Sons.

BOVILL, C. & WOOLMER, C. 2019. How conceptualisations of curriculum in higher education influence student-staff co-creation in and of the curriculum. *Higher Education*, 78, 407-422.

BOWDEN, J. AND MARTON, F., 1998. *The university of learning: Beyond quality and competence.* London: Kogan page.

BRANDSEN, T., STEEN, T. & VERSCHUERE, B. (eds.) 2018. *Co-Production and Co-Creation: Engaging Citizens in Public Services:* Routledge.

EIRIK ABRAHAMSEN, J. T. K., JON TØMMERÅS SELVIK, DAG HUSEBØ. 2021. Mengden av organiserte læringsaktiviteter og sammenhengen med studentenes motivasjon, egeninnsats og overordnede tilfredshet med studiet. *Nordic Journal of STEM Education*, 4, 45-57.

EKSTRÖM-BERGSTRÖM, A., THORSTENSSON, S. & BÄCKSTRÖM, C. 2022. The concept, importance and values of support during childbearing and breastfeeding – A discourse paper. *Nursing Open,* 9, 156-167.

GARRISON, D. 2007. Online community of inquiry review: Social, cognitive, and teaching presence issues. *Journal of Asynchronous Learning Networks,* 11, 61-72.

GIBBS, G. 1988. Learning by doing – a guide to teaching. Oxford: Oxford Polytechnic Further Education Unit. Available at: <https://shop.brookes.ac.uk/product-catalogue/oxford-centre-for-staff-learning-development/books-publications/ebooks/learning-by-doing-a-guide-to-teaching-and-learning-methods-by-graham-gibbs-ebook> (Accessed 15th November 2022).

GOVENDER, C. M. & WAIT, M. 2017. Work integrated learning benefits for student career prospects - mixed mode analysis. *South African Journal of Higher Education,* 31, 49-64.

HATTINGER, M., ERIKSSON, K., MALMSKÖLD, L. & SVENSSON, L. Work-Integrated Learning and Co-creation of Knowledge : Design of collaborative technology enhanced learning activities. 2014.

KELLER, C. & HRASTINSKI, S. 2009. Towards digitally literate university teachers. *Nordic Journal of Digital Literacy,* 4, 104-115.

LUBICZ-NAWROCKA, T. & OWEN, J. 2022. Curriculum Co-creation in a Postdigital World: Advancing Networked Learning and Engagement. *Postdigital Science and Education, 4,* 793-813.

MASTERSON, D., ARESKOUG JOSEFSSON, K., ROBERT, G., NYLANDER, E. & KJELLSTRÖM, S. 2022. Mapping definitions of co-production and co-design in health and social care: A systematic scoping review providing lessons for the future. *Health expectations*, 25, 902-913.

MORALES, E., KALIR, J. H., FLEERACKERS, A. & ALPERIN, J. P. 2022. Using social annotation to construct knowledge with others: A case study across undergraduate courses. *F1000Res*, 11, 235.

NABATCHI, T., SANCINO, A. & SICILIA, M. 2017. Varieties of participation in public services: The who, when, and what of coproduction. *Public Administration Review*, 77, 766-776.

NORTON LS, TILLEY AJ, NEWSTEAD SE, FRANKLYN-STOKES A. 2001. The pressures of assessment in undergraduate courses and their effect on student behaviours. *Assessment & Evaluation in Higher Education*, 26, 269-84.

RACE, P. 2007. *The Lecturer's Toolkit: A Practical Guide to Assessment, Learning and Teaching*, London, Routledge.

SLATTERY, P., SAERI, A. K. & BRAGGE, P. 2020. Research co-design in health: a rapid overview of reviews. *Health research policy and systems*, 18, 1-13.

SCIE. 2015. *Coproduction in Social Care: What It Is and How to Do It.* Available at: <www.scie.org.uk> (Accessed: 15th November 2022).

SPEIGHT, S., MOREIRA, G. & HUSEBO, D. 2020. Listening to students for tomorrow, today: engaging students to students to define the future of higher education. *Student Engagement in Higher Education Journal* 3, 96-114.

TAYLOR, C. & BOVILL, C. 2018. Towards an ecology of participation: Process philosophy and co-creation of higher education curricula. *European Educational research Journal*, 17, 112-128.

WHEELY, E., KLIEVE, H. & CLARK, C. 2022. Developing reflection and critical thinking in a leadership education: leading learning and change. *Studies in higher education*, 47, 2575-2589.

WINEFIELD, H. 2004. Developing and evaluating Training and Teaching. In: S., M. & ABRAHAM, C. (eds.) *Health psychology in Practice*. BPS Blackwell.

Local perceptions and definitions of social sustainability – An illustration of Trollhättan municipality

Erika Karlsson, *University West, School of Business, Economics, and IT, SE-461 86 Trollhättan, Sweden, erika.karlsson@hv.se*

Keywords: social sustainability; policy formulation; policy implementation; work-integrated learning

Abstract:
More than thirty years after the publication of the the Brundtland report "Our Common Future" (World Commission on Environmental and Development, 1987), the social dimension of sustainability remains theoretically underdeveloped. Sweden has since the adoption of the Global Sustainable Development Goals set out to take a leading role in the implementation of these goals. Granted that Swedish municipalities enjoy a considerable degree of autonomy and thus provide citizens with a majority of public services, municipalities are central to the realization of national commitments to international agreements such as the Global Sustainable Development Goals. Consequently, part of the national strategy for realization of the Global Sustainable Development Goals consists of support to municipalities in developing local strategies for implementation of the goals.

Previous research on policy implementation highlights the importance of the policy formulation stage for successful implementation of policy (Winter and Nielsen, 2008, Winter, 1986, Bardach, 1977). With the social dimension of sustainability left rather vague and undefined on the international and national level, municipalities are likely to face some challenges both in translating the social dimension of sustainability into local goals but also in the realization of these.

Some researchers argue that it is necessary to differentiate between scientific sustainability studies and processes of defining sustainability at the political level (Griessler and Littig, 2005). On the contrary, I argue that one way of developing the concept of social sustainability theoretically could be to study these practical political processes of defining social aspects of sustainability. The aim of this research is thus to explore and understand the complexity of the social sustainability concept in the local context of a municipality in Sweden. This study is part of a collaborative project on sustainable societal development between University West and Trollhättan municipality. The study is designed as an explorative case study of Trollhättan municipality, in which I use theories on policy implementation and social sustainability to conduct a qualitative content analysis of policy documents. In addition to policy documents, I have also included field notes from participant observations from meetings and workshops at Trollhättan municipality during the time-period January-November 2022.

The preliminary results of the analysis indicate that Trollhättan municipality understands sustainability as three-dimensional consisting of ecological, economic, and social sustainability. Social sustainability is understood as an important dimension in its own right and not merely as a means to support the ecological dimension. The link between the social aspects and the ecological aspects of sustainability is fairly weak.

In terms of substantive social sustainability, the local social sustainability strategy has a focus on housing, employment, gender quality, health, and well-being. The understanding of the procedural aspects of social sustainability in Trollhättan is centered around creating pre-conditions, possibilities, and opportunities for social sustainability rather than reaching social sustainability in itself. There is an emphasis on inhabitant participation, but this aspect is not yet clearly defined in terms of how this participation is to be facilitated.

The social dimension of sustainable development remains vague and undefined. With this study I explore the possibility of using a work-integrated learning approach in order to contribute to the theoretical development of the social dimension of sustainable development. I suggest that one way of gaining a deeper understanding of social sustainability as a concept is to study the practice of formulating, designing, and implementing policy at the level closest to the people affected by it. In Sweden this is the municipal level. This study aims to contribute both to sustainability research, research on public administration and policy implementation as well as work-integrated learning.

References

BARDACH, E. 1977. *The Implementation Game,* Cambridge, MA, MIT Press.

GRIESSLER, E. & LITTIG, B. 2005. Social sustainability: a catchwork between pragmatisk and social theory. *International Journal for Sustainable Development,* 8**,** 65-79.

WINTER, S. C. 1986. How Policy-Making Affects Implementation: Decentraization of the Danish Disablement Pension Administration. *Scandinavian Political Studies,* 9**,** 361-385.

WINTER, S. C. & NIELSEN, V. L. 2008. *Implementering af politik,* Copenhagen, Acadmia.

WORLD COMMISSION ON ENVIRONMENTAL AND DEVELOPMENT, W. 1987. *Our common future,* Oxford, Oxford University Press.

Placement Strategies in Community Development: Evolving Sustainable Work Integrated Learning relationships

Ms Nthatisi Nkoebele*, *University of the Free State, Qwa-Qwa Campus, South Africa,* *Nkoebelen@ufs.ac.za*

Dr Grey Magaiza, *University of the Free State, Qwa-Qwa Campus, South Africa,* *Magaizag@ufs.ac.za*

Corresponding author

Keywords: student placement, strategies, and processes, WIL, sustainable learning, relationships

Abstract

An effective Work Integrated Learning (WIL) experience in community development is underpinned by a systematic student placement process. This article describes the placement process in Community Development at the University of the Free State by placing student placement on a WIL continuum. WIL has been extensively explored across many disciplines. Furthermore, WIL is a critical component in many professional degrees. The Department of Community Development in the University of Free State, QwaQwa Campus offers a degree in Bachelor of Community Development, at NQF Level 8. For the fulfillment of this professional qualification, there is a compulsory practical component where students must be placed in agencies for Work Integrated Learning (WIL). WIL is the final product that we observe where students apply theory in practice. What leads to students being able to practice this theory in a real-life setting? What practical processes occur before students are placed and what impact do these processes have on the completion of a successful WIL experience? Who are the role players in these practicalities in ensuring that WIL is successful and yields a positive outcome for the student/s? Lastly, where and when do these processes happen? Placement, although used to describe WIL in some literature, in this article, placement is used to describe the practical process and strategies of ensuring that students gain appropriate placement sites that meet their learning outcomes. The placement process in the Community Development program is demonstrated using a process flow of stages, at the end of which leads to WIL. This process was anchored by two WIL theoretical frameworks, namely Experiential and Situated learning theories. These two theories were used to demonstrate how placement and WIL intercept and are interdependent on one another. Moreover, the process flow demonstrates how WIL cannot take place if meaningful strategies and practical measures are not put in place. These include role players who make the initial contact with institutions/organizations, how students are chosen, learning outcomes and placement sites, which institutions/organizations are chosen, capacity building for supervisors and students, as well as maintenance of good stakeholder relationships. Student placement is a critical precursor to successful WIL endeavors especially if it is linked to the learning outcomes of an academic program. The amplification of WIL within literature and higher education institutions in South Africa necessitates the need for more structured student placement strategies that enhance positive relationship building and enable the development of viable learning ecologies. This article explored how Community Development as a multidisciplinary profession, necessitates placement approaches that require the identification and evaluation of many learning spaces before WIL encounters. While the literature speaks extensively on WIL, there is a gap in the practicalities of placement initiatives, processes, and strategies, which are critical to having a successful WIL outcome. It further elucidated the practicalities of implementing WIL by explaining how student placement is critical to the evolution of viable learning ecologies vital for successful work-integrated learning relationships. The student placement process is seen in this article as a critical anchor to the success of the WIL. Placement is not an independent entity but rather on the WIL continuum. Where placement processes and strategies conclude, WIL begins. This placement process is unique and other disciplines may employ similar or different processes, and this needs further research. Placement is an anchor to WIL. In the absence of placement strategies and practical interventions, WIL would not take place. Therefore, placement lays down the groundwork for WIL by taking various factors into consideration. One essential feature is learning outcomes which need to be met when students are placed in various institutions/organizations. Placement is key to ensuring that students are placed in placements sites that not only nurture their professional identities and personal development but more importantly, their learning outcomes must be met. WIL has set role players, these often include the WIL coordinator, students, and external organizations, however, institutions like the University of the Free State, in the program of Community Development make use of other support staff members specifically focused on implementing placement strategies. Placement coordinators implement strategies and practical methods for WIL and their role needs to be further understood in the context of WIL. Placement and WIL have students in common. Therefore, students' successful completion of WIL is heavily reliant on a systematic and methodical placement process that takes expected learning outcomes and students' holistic development to consideration before WIL starts. Students need placement sites with supervisors who will mentor and support their development.

In turn, universities also play their part by teaching theoretical knowledge that needs to be implemented in functional placement sites. Lastly, WIL occurs in context as does placement. Placement processes take student context and organizational context into consideration before placing them. This ensures that goodness of fit occurs between what the placement site needs as well as student needs in terms of their learning outcomes. This may not always be the case however because placement strategies and processes are context-driven, and these may vary according to institutions as well as geographical contexts this is something to consider for future research.

Exploring focus group discussions for building knowledge across emergency services organisations – a foundation for road tunnel incidents responses and future research?

Annika Eklund*, PhD, *Department of Social and Behavioural Studies, University West, Trollhättan, Sweden; Department of Surgical and Perioperative Sciences, Surgery, Centre for Disaster Medicine, Umeå University, Umeå, Sweden*

Sofia Karlsson, PhD, *Department of Surgical and Perioperative Sciences, Surgery, Centre for Disaster Medicine, Umeå University, Umeå, Sweden*

Johan Hylander, RN, MD, PhD student, *Department of Surgical and Perioperative Sciences, Surgery, Centre for Disaster Medicine, Umeå University, Umeå, Sweden*

Henrik Östlund F.E, *Bricon AB, Sweden*

Lina Gyllencreutz, RN, PhD, *Department of Surgical and Perioperative Sciences, Surgery, Centre for Disaster Medicine, Umeå University, Umeå, Sweden; Department of Nursing, Umeå University, Umeå, Sweden*

*Corresponding author

Keywords Emergency services organisations, mass-casualty incident, road tunnel, collaboration, professional learning, focus group

Introduction and aim

Road tunnels are important parts of today's infrastructure and society, but also with potential for many injured in case of an incident and a challenging work environment for emergency services organisations. If a mass-casualty incident (MCI) occurs in a road tunnel, specific challenges in terms of safety, heat, smoke, long distances to the injured and lack of and contradictory information will impact the response and how collaboration is established (Holgersson *et al*., 2020; Lockey *et al*., 2005). In addition, sharing information during responses is, however, often limited due to the lack of knowledge and understanding of each other's work processes at an individual and organisational level (Sederholm *et al*., 2021). A key for collaboration here is a good understanding of how their own, and collaborative organisations interpret and operate in a potentially shared task (Edwards, 2012; Wolbers *et al*., 2017). Thus, the road tunnel environment is one area where research has pointed to the need for a shared understanding of incidents across the organisations (Casse & Caroly, 2019) and for arenas facilitating exchange of experiences and reflections upon work procedures to develop collaboration (Njå & Svela, 2018; Hylander *et al*., 2022). This calls for activities that could stimulate work-integrated learning. While exercises and simulations are valuable in enhancing response preparedness, the perceived effects have been reported to vary in terms of learning and usefulness (see e.g., Roud et al., 2021). In addition, exercises and simulations are expensive and time-consuming, calling for alternative but still effective learning activities for developing collaboration. This abstract aim to present and critically explore an innovative learning activity for development of joint knowledge to improve MCI response in road tunnel environments.

Design and participants

The learning activity analysed for this abstract was a series of four focus groups á 4 to 4,5 hours, conducted online in a region of Sweden. The overall aim of the series was to share experiences and develop joint knowledge across emergency organisations in tunnel environments. The participants in the focus groups represented the organisations that typically respond to tunnel incidents, i.e., ambulance service (EMS), police service, rescue service, Swedish Transport Administration (RTCC, Trafikverket) and emergency dispatch center (EDC, SOS Alarm) (Table 1). The study participants had extensive work experience within their organisations and are expected to have a tactical or operational management function in a major response.

Table 1. Overview of study participants*

Session I	Session II	Session III	Session IV
2 EMS personnel	2 EMS personnel	2 EMS personnel	2 EMS personnel
1 RTCC-operator	1 RTCC-operator	1 RTCC-operator	1 RTCC-operator
2 EDC-operators	2 EDC-operators	2 EDC-operators	1 EDC-operator
1 rescue service personnel	1 rescue service personnel	1 rescue service personnel	1 rescue service personnel
	1 police officer	1 police officer	

*The rescue services had three different representatives, whereas the police service had two. The police service was unable to participate in session I and IV.

The researchers designed the focus group series with the intention to alternate experiences, with procedural, conceptual and practical elements. The study used a partly participatory design. For this study, rather than being co-interpreters of the results, the participants were involved to shape the sessions content and questions to be discussed in ways they found valuable (Baum et al., 2005). The researchers built the following session from what the participants had asked for, discussed, or found challenging in the prior sessions. One week in advance, the overarching theme, goal, and suggestions for discussion questions for the session, and a summary of bullet points from the previous session, was sent out to the participants. *Session I* was set out to be an open discussion to familiarize themselves with each other's ways of working, and to discern the participants' understandings of specific challenges and needs for responses in tunnels, but also to illuminate the impact of internal decisions and actions for saving lives safely. The first approximate 20 minutes was discussed as crucial for establishing a tunnel response, which is why this phase was focused on during *Session II*: a best-practice discussion based on the initial 20 minutes of a full-scaled exercise where several of the participants had been involved. Information gathering and sharing was highlighted as both crucial and challenging, which lead to the research group introducing and participants discussing practical implications of concepts of "situational awareness" in *Session III*. *Session IV* was a 'digital exercise' based on a crash and vehicle fire in a tunnel, aiming to wrap up the identified challenges and practicing information sharing and management during the initial 20 minutes of the response.

The analysis was conducted as critical discussions in the research group, in-between the sessions and when the full series was conducted, set out to identify potential strengths and weaknesses/challenges of the design and content for knowledge development. The results will present the preliminary findings and contributions.

Results

The analysis performed for this abstract found that the focus groups series has strengths and weaknesses/challenges to build knowledge across organisations regarding potential MCI road tunnel responses.

First, the opportunity to discuss the same questions from four "basis"/perspectives, including presenting the organisations own perspectives and exercise experiences, a theoretical concept, and a practical moment was a strength. However, rather than a progression of learning (such as becoming more effective in information sharing), the design primarily allowed analysis of a deeper and more complex understanding of the overall question of joint and timely responses.

Second, the iterative and participatory design was a strength in terms of that the sessions could to some extent focus on the issues the participants highlighted. By using this method, the participants also had the possibility to reflect upon prior and upcoming sessions (Baum et al., 2006). This could, however, be a limitation for comparing results across different groups if the issues of concern diverge too much.

Third, the focus groups could contribute to the organisations' knowledge development across practices, such as identifying specifically critical moments when establishing a response or sharing thoughts about safety. Using this design could be a complement to the typical focus on actions in exercises and training (Roud et al., 2021). In addition, the nature of focus group data provides opportunities to analyse interactions (Wilkinson, 2021). Still, how the knowledge developed could be further implemented in and across the organisations remains unknown and needs further consideration in research and practice.

Fourth, the focus groups were effective for researchers to explore how knowledge is shared and possible contradictions in interpretations and actions. This approach is valuable for developing knowledge in cross-practice collaborations (Edwards, 2012). Including materials from a full-scale exercise and a practical digital exercise was valuable due to the obvious connection to their work tasks and potential challenges, and to contextualize their learning. Further, the amount and various types of data obtained from each session, such as discussing a theoretical concept and a practical exercise moment, could pose challenges for analysis. However, including both structured discussions and practical exercises as stimuli could strengthen the internal validity of the findings (e.g., reduce the discrepancies between what they say they do and what they actually do).

Fifth, using online meetings was time-effective (and safe during the COVID-19 pandemic), allowing participants and researchers to work from where they choose. However, the online setting produced primarily a dialogue between moderator and participants, with less initiatives for dialogues between participants. It could be valuable to further evaluate the design in physical meetings. Moreover, it was easier to drop out or pop out, to simultaneously manage other work tasks, from online meetings compared to physical meetings.

Conclusion

In conclusion, we would here argue that using inter-organisational focus groups, that acknowledge participants needs for learning and providing various stimuli to engage in a shared problem, can contribute to knowledge development for future tunnel responses. Research and practice should further explore how various interpretations and actions can be used to improve strategies, communication and organizational changes. Further research could

also explore how discussion-based learning activities can be used as a platform to develop and maintain collaborative learning networks, and as a complement to exercises and simulations.

References

Baum, F., MacDougall, C. & Smith, D. (2006), "Participatory action research", *Journal of Epidemiology and Community Health*, Vol. 60, pp. 854–857.

Casse, C. & Caroly, S. (2019), "Analysis of critical incidents in tunnels to improve learning from experience", *Safety Science*, Vol 116(July), pp. 222–230.

Edwards, A. (2012), "The role of common knowledge in achieving collaboration across practices", *Learning, Culture and Social Interaction*, Vol. 1 No. 1, pp. 22–32.

Holgersson, A., Eklund, A., Gyllencreutz, L. and Saveman, B-I. (2020), "Emergency response in mass-casualty in tunnel incidents – with emphasis on prehospital care", *Journal of Human Security*, Vol. 16 No. 1, pp. 3–15.

Hylander, J., Saveman, B-I., Björnstig, U., Gyllencreutz, L. and Westman, A. (2022), "Time-efficiency factors in road tunnel rescue as perceived by Swedish operative personnel – an interview study", *International Journal of Emergency Services*, Vol. 11 No. 2, 312–324.

Lockey, D.J., MacKenzie, R., Redhead, J., Wise, D., Harris, T. *et al.* (2005), "London Bombings July 2005: The Immediate Prehospital Medical Response", *Resuscitation,* Vol. 66 No. 2, pp. ix–xii.

Njå, O. and Svela, M. (2018), "A review of competencies in tunnel fire response seen from the first responders' perspectives", *Fire Safety Journal,* Vol. 97(April), pp. 137–145.

Roud, E., Haugen Gausdal, A., Asgary, A. and Carlström, E. (2021), "Outcome of collaborative emergency exercises: Differences between full-scale and tabletop exercises", *Journal of Contingencies and Crisis Management*, Vol. 29 No. 2, pp. 170–184.

Sederholm, T., Ekman, S., Paakkonen, H. and Huhtinen, A-M. (2021), "Inter-organisational communication and situational awareness in an emergency operation centre during major incidents", *International Journal of Emergency Management,* Vol. 17. No. 1, pp. 47–64.

Wilkinson, S. (2021), "Analysis of focus group data". In D Silverman (ed) *Qualitative research*, 5th edition, pp. 87–104.

Wolbers, J., Boersma, K. and Groenewegen, P. (2017), "Introducing a Fragmentation Perspective on Coordination in Crisis Management", *Organization Studies,* Vol. 39 No. 11, pp. 1521–1546.

Bachelor thesis as practice-based WIL education and the role of supervision

Karl Dahlquist*, *School of Business, Economics and IT, University West, Gustava Melins gata 2, 461 32, Sweden, karl.dahlquist@hv.se*

Tuba Inal, *School of Business, Economics and IT, University West, Gustava Melins gata 2, 461 32, Sweden,* tuba.inal@hv.se

*Corresponding author

Bachelor thesis writing and supervision as potential practice-based WIL

In Sweden, students are required to write a bachelor's thesis in both vocational and academic university programs, though the writing and supervision process differ across disciplines and institutions. In our research on undergraduate education and work-integrated education (WIE) in the social sciences, we conceive of thesis writing and supervision, as performed in the undergraduate program, International Program in Politics and Economics (IPPE) at University West, as an example of *practice*-based education. While studying the educational practice of thesis writing from the viewpoint of *work-integrated* learning (WIL), we pose two sets of questions: how and what kind of knowledge or skills are required and acquired, and what is the role and kind of supervision involved throughout the research-thesis writing process? The second set of questions is whether the practice of thesis writing could be classified as WIE, and ultimately, if WIL is achieved; more precisely, we are investigating what kind of learning is acquired and processed, and in what ways the "knowledge" acquired through this kind of research practice is transferable to "work-life" and result in "life-long-learning"? Is the thesis writing bridging the "gap" between the university and post-graduate professional careers? To answer these interrelated questions, we construct a theoretical framework that conceptualizes work-integrated supervision as cognitive apprenticeship and dissects the supervision process which aims to develop a particular set of skills that will align (i) the aim of high-quality academic university education, with; (ii) the new (mass-) diversity of student population, with; (iii) the increasing emphasis on employability and career advancement.

Material and method

Our specific object of study is an academic program in political science that according to national curriculum regulations must contain a scientific research thesis, which is closely followed by supervisors assigned to student groups of two. It is a hands-on approach to supervision (Sinclair, 2004) following a strict timeline and structure as well as support. We investigate thesis-writing as a practice, the role of the supervisor therein, and the relation between thesis writing, the curriculum, and work-life. The primary data in this qualitative small-N study is gathered by a combination of interviews and participant observation. We conducted 15 semi-structured interviews and participated in 22 supervision sessions with 4 thesis groups. From the data collected, we identified patterns, commonalities, and differences around how the students experience the practice of writing a thesis and its relation to their work life.

Results and indications

The findings indicate that bachelor thesis writing and supervision in the form that it is practiced at IPPE is WIL. This specific model of supervision is that of an apprenticeship. While components of traditional (or vocational) apprenticeship is included in the relationship (especially when it comes to teaching/learning the actual practice of research), cognitive apprenticeship with a variety of methods to allow the apprentices to observe and actively engage in the practice through the supervisor's strategic push toward independence (Collins, Brown, and Newman 1987) provides the basis of the relationship. The one-to-one hands-on cognitive apprenticeship supervision in the program is by far the most extensive task through which the students learn how to reflect on practice and become professional in what is a wide-open career trajectory. WIL is attained through working closely with a professional in their professional capacity as his/her apprentice and being trained in that very profession (as researchers) as a result of which they acquire the skills required for an increasingly intensive knowledge economy and the public sphere. The supervision model designed as an educative, supporting, and controlling process of seven steps ranging over 20 weeks complements the academic social science education students receive up to that point sealing the acquisition of epistemological skills such as critical thinking, problem solving, capacity for relearning, and coworking in groups as well as boosting ontological skills of time and project management in becoming confident professionals.

Implications and contributions

While there have been previous studies on conceptualizing supervision within a WIL framework, they mostly focus on the supervision of students in the workplace/place of internship in relation to the work practices (Cooper et al., 2010), or supervision, mentorship, and feedback at the workplace (Eraut, 2010), rather than the academic thesis writing. These studies, therefore, focus on supervision more as a WIE practice, i.e., supervision with the intention of making sure that workplace experience of the supervisee serves certain learning outcomes (Billett, 2019), rather than as a WIL practice for learning to process experience for knowledge production. Our finding that the specific model of bachelor supervision within the context of WIL, based on the relationship between the supervisor and the supervisee(s) as a relationship of cognitive apprenticeship achieves WIL, is thus a novel contribution to the field.

Thesis writing, at all levels of higher education, is considered the pinnacle of the learning process at that particular level, where the students get the opportunity to turn the core knowledge they acquired from coursework into a reflective experience. The way thesis writing is handled, therefore, seems to have special relevance from a WIE perspective, since the way this reflective experience is organized and guided by the supervisor has a significant impact on the extent to which the candidates can attain WIL: learning from experience as independent researchers and acquire the ability for "reflective" knowledge/learning (Billet 2012) on both practice and learning, as required for "progressive growth" (Dewey 1976-1983; see also Fleming & Haigh, 2018), as well as "critical reflections" (Trede & Mcewen, 2012). The result from our study thus contributes to the problem of knowledge transferability between the university and "work-life" (Eraut, M., 2010) be resolved through a "transformational" WIL model of academic supervision along the lines of Liberal Arts education's broad appeal to knowledge and critical awareness that both question, analyze, and better prepare a diverse set of students for the knowledge economy, and a labor market that regularly sees people move in and out of different careers, not least as skills and even professions become obsolete (Crisp 2019; DeNis et al., 2003; Gannaway et. al., 2017).

References
Billet, S. (2012). Practice based learning and professional education: Pursuing quality outcomes and sustainability. In Higgs, J., Barnett, R., Billet, S. Hutchings, M. Trede, F. (Eds). *Practice based education. Perspectives and Strategies*. Sense Pub.

Billett, Stephen (2019). Augmenting Post-Practicum Experiences: Purposes and Practices. In Billett S., Newton J., Rogers G., Noble C. (eds) *Augmenting Health and Social Care Students' Clinical Learning Experiences. Professional and Practice-based Learning*, vol 25. Springer.

Björck, Ville & Kristina Johansson (2019). Problematising the Theory-Practice Terminology: A Discourse Analysis of Student's Statements on Work-integrated Learning" in *Journal of Higher Education 43*(10), 1363-1375.

Collins, A., Brown, J. S., & Newman, S. E., (1987). *Cognitive Apprenticeship: Teaching the Craft of Reading, Writing, and Mathematics* (Technical Report No. 403). University of Illinois Center for the Study of Reading.

Cooper, Lesley; Orrell, Janice; Bowden Margaret (2010). *Work Integrated Learning: A Guide to Effective Practice*. Routledge.

Crisp, G, Higgs, J. Letts, W (2019). The employability agenda. In Higgs, J. Letts, W. Crisp, G (eds.) *Education for employability. Learning for future possibilities* (pp. 263-272). Brill sense.

DeNisi, A.S., Hitt, M.A., Jackson, S.E. (2003). The knowledge-based approach to sustainable competitive advantage. In Jackson, S.D., Hitt, M.A. DeNisi, A.S. (eds) (2003) *Managing knowledge for sustained competitive advantage: Designing strategies for effective human resource management*.

Dewey, John (1976-1983). *John Dewey: The middle works, 1899-1924. Volumes 1-15.* (Jo Ann Boydston, Ed.). Southern Illinois University Press.

Eraut, M. (2010). Knowledge, Working Practices, and Learning. In Stephen Billet (ed.) *Learning Through Practice: Models, Traditions, Orientations and Approaches* (pp. 37–58). Springer.

Fleming, J. & Haigh, N. J. (2018). "Using sociocultural insights to enhance work-integrated learning." *Higher Education, Skills and Work-Based Learning*, 8(4), 395- 407.

Gannaway, D. & Sheppard, K. (2017). WIL in Liberal Arts Programs: New Approaches. In Bowen, T. & Drysdale, M.T.B. (Eds.) *Work-Integrated Learning in the 21st Century: Global Perspectives on the Future* (pp. 51-66) [E-Book]. Emerald Publishing.

Sinclair, M. (2004). *The pedagogy of 'good' PhD supervision: A national cross-disciplinary investigation of PhD supervision*. Australian Government, Department of Education, Science and Training.

Trede F. and Mcewen C. (2012). Developing a critical professional identity: engaging self in practice. In Higgs, Joy. *Practice-Based Education: Perspectives and Strategies*. Sense Publishing.

Teaching Here and Now but for the Future: Vocational Teachers' Perspective on Teaching in Flux

Sandra Carlsson*, *PhD Student, School of Business, Economics, and IT, University West,* *sandra.svensson@hv.se*

Sara Willermark *Associate Professor, School of Business, Economics, and IT, University West,* *sara.willermark@hv.se; [3]Department of Education, School of Education, Humanities and Social Sciences, Halmstad University,* *sara.willermark@hh.se*

Introduction

When digital technology is introduced into work practice, it means that vocational practice develops and changes (Castells, 2011). New methods, tools, and processes in working life require vocational teachers to develop fundamental vocational competencies and preparedness for this change for their pupil's employability (Persson, 2020). The concept of vocational competencies is understood in different ways (Billett, 2001) yet is often described as tacit and situated (Gåfvels and Paul, 2019). Vocational competence can be described as a symmetric relationship between knowledge, skills, and attitudes (Hiim, 2020, Baartman and De Bruijn, 2011). As working life changes, it places new demands on vocational competence and the use of different technologies. Various attempts have been made to elaborate on the competence needed for teaching in a digitalized society and a digitalized school (Ferrari, 2012, Hatlevik and Christophersen, 2013, Howell, 2012, Kivunja, 2013, Krumsvik, 2008). Vocational practices are intimately associated with physical materials such as objects, bodies, technologies, and these settings permit some actions and prevent others (Carlsson et al., 2022; Fenwick, 2015). In this study, we explore vocational teachers' perspectives on preparing students for future working life and how they relate to teaching in a digitalized society.

Theoretical perspective

The TPACK framework, expressing Technological Pedagogical and Content Knowledge, has arisen as a theoretical framework that specifies what knowledge is required for teaching with technology. It emphasizes that teaching involves developing an understanding of the complex relationship between technology, pedagogy, and content and using this understanding to develop suitable context-specific strategies and representations (Mishra and Koehler, 2006; Willermark, 2018; Willermark and Pareto). In this study, we use TPACK as an analytical lens to explore vocational teachers' perspectives on preparing students for future working life and how they relate to teaching in a digitalized society.

Method

The data consists of 10 interviews with vocational teachers from 8 different vocational programs in Swedish upper secondary vocational education. The participants were recruited from a previous survey carried out by the authors (Carlsson & Willermark, 2022) that explored vocational teachers' experiences in using and developing teaching material. A qualitative content analysis was carried out.

Findings and contributions

Findings show how teachers benefit from digital technology to support pedagogical strategies as well as facilitate students' content knowledge. Still, digitalization entails challenges of keeping up with changes in professional life and providing students with appropriate vocational digital technologies. It is clear how intimately connected and intertwined digitalization is with pedagogy and the subject content of vocational education (Koehler and Mishra, 2009). Contributions include increased knowledge about digitalization in vocational education, and how it entails navigating tensions between a) teaching practice and vocational practice, b) between different curricula and c) supportive and disruptive digital technologies.

References

BAARTMAN, L. K. & DE BRUIJN, E. 2011. Integrating knowledge, skills and attitudes: Conceptualising learning processes towards vocational competence. *Educational Research Review,* 6**,** 125-134.

BILLETT, S. 2001. Knowing in practice: Re-conceptualising vocational expertise. *Learning and instruction,* 11**,** 431-452.

CARLSSON, S., FLENSNER, K. K., SVENSSON, L. & WILLERMARK, S. 2022. Teaching vocational pupils in their pyjamas: a socio-material perspective on challenges in the age of Covid-19. *The international journal of information and learning technology*.

CARLSSON, S. & WILLERMARK, S. DESIGNING TEACHING MATERIAL FOR WORKPLACE PEDAGOGY IN SCHOOL 2022 Sevilla. 15th annual International Conference of Education, Research and Innovation (ICERI).

CASTELLS, M. 2011. *The rise of the network society: The information age: Economy, society, and culture*, John Wiley & Sons.

FERRARI, A. 2012. Digital competence in practice: An analysis of frameworks. *Sevilla: JRC IPTS.(DOI: 10.2791/82116)*.

GÅFVELS, C. & PAUL, E. 2019. LÄRLING ELLER SKOLUTBILDNING: olika vägar mot samma mål? [APPRENTICE OR SCHOOL EDUCATION: Different paths aiming for the same goal?]. Skolverket.

HATLEVIK, O. E. & CHRISTOPHERSEN, K.-A. 2013. Digital competence at the beginning of upper secondary school: Identifying factors explaining digital inclusion. *Computers & Education,* 63**,** 240-247.

HIIM, H. 2020. Å vurdere yrkeskompetanse: Hva er yrkeskompetanse, og hvordan kan den vurderes?[Evaluating vocational competence: What is vocational competence, and how can it be evaluated?]. *Nordic Journal of Vocational Education and Training,* 10**,** 45-66.

HOWELL, J. 2012. *Teaching with ICT: Digital pedagogies for collaboration and creativity*, Oxford University Press.

KIVUNJA, C. 2013. Embedding digital pedagogy in pre-service higher education to better prepare teachers for the digital generation. *International Journal of Higher Education,* 2**,** 131-142.

KOEHLER, M. & MISHRA, P. 2009. What Is Technological Pedagogical Content Knowledge? *Contemporary Issues in Technology and Teacher Education (CITE Journal),* 9**,** 60-70.

KRUMSVIK, R. J. 2008. Situated learning and teachers' digital competence. *Education and Information Technologies,* 13**,** 279-290.

MISHRA, P. & KOEHLER, M. 2006. Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers college record,* 108**,** 1017.

PERSSON, M. 2020. Digitalisering i yrkesutbildningen inom samhällsbyggnadssektorn: en förstudie. Malmö universitet.

WILLERMARK, S & PARETO, L. 2018. TPACK in situ: A design-based approach supporting professional development in practice. *Journal of Educational Computing Research*, *57*(5), 1186-1226.

WILLERMARK, S. 2018. Technological pedagogical and content knowledge: A review of empirical studies published from 2011 to 2016. *Journal of Educational Computing Research,* 56**,** 315-343.

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Achieving Quality Education through Internationalization using Digital Technology: Reflections on a Collaborative International Masters Programme in Work-Integrated Political Studies

Associate Professor Fredrik Sunnemark*. *University West, Sweden. Email:* *per.assmo@hv.se*

Ms. Wilma Lundqvist-Westin, *University West, Sweden, E-mail:* *wilma.lundqvist-westin@hv.se*

Professor Per Assmo, *University West, Sweden & University of the Western Cape, E-mail:* *per.assmo@hv.se, passmo@uwc.ac.za*

Professor Laurence Piper, *University West, Sweden & University of the Western Cape, E-mail:* *laurence.piper@hv.se, lpiper@uwc.ac.za*

*Corresponding author

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Extended abstract
In recent decades, internationalization has become an important component of higher education for universities. The rationale behind the internationalizing of university courses and programs varies, depending on focus and interest, with some being of more marketing/economical character and other more concerned to deepen the quality of higher education. Irrespective of the main reasons behind the process, the internationalization of higher education tends to expand even further, not least due to the possibilities connected to digital technology.

Indeed, in more recent times the Covid-19 pandemic, has deeply digitalised educational and working life, raising deep questions not just about the modalities of learning, but the possibilities of new kinds of learning too. It is this concern that is the main focus of this paper: in what ways does deepening digitalisation enable internationalisation, and what are some of the dynamics, positive or negative, associated with this new trend?

This paper answers this question through an initial high-level study of a joint international master's program in Work Integrated Political Studies (WIPS), developed between University West (UW), Sweden, and the University of Western Cape (UWC), South Africa. The collaboration is unique in that it introduces new academic ways of learning and substantive content, formed through the development of Work Integrated Learning (WIL) as an academic subject and postgraduate degree. Central to WIL is the idea that learning happens equally through doing real world tasks as much as through traditional teaching, and this involves workplace as well as University activities. Consequently, and important part of the WIPS programme is a final year research internship, integrated with a compilation thesis, which provides the students with a possibility to study and conduct research on real world challenges, for a host organization.

The paper employs an analytical framework using six concepts from the literature: (i) neo-liberal versus (ii) better quality education; (ii) pedagogically integrated and (iv) accessible digital technology; (iv) learning through doing as well as teaching; as well as (v) better life readiness.

The internationalisation literature highlights the distinction between the development of programmes aimed to secure more short-term, elite status and financial ends, and those orientated to better quality education through longer term, multicultural engagement of difference. This gives the first two concepts to look for: neo-liberal internationalisation versus internationalisation for better quality education. The digitalisation literature notes the importance of digital technologies that are thoughtfully integrated into a coherent pedagogical approach, and that are accessible to users, whether through public infrastructure or skills development. This gives the pedagogically integrated and accessible digital technologies. Finally, the WIL literature identifies an approach to education that integrates traditional teaching with real world practice, through synergies between the university, the student and the workplace, and that better prepares students for life after the University. This highlights the learning through doing as well as teaching and better life readiness concepts.

Based on the primary data gathered from students and staff at both Universities during the first year of the masters, the paper demonstrates how digital technology, complemented with student and staff exchange, helps make the programme a more international, and a more educational environment. Interestingly, this remains true, even while the collaboration between Sweden and South Africa exposes real and important differences in practices and meanings of university teaching, working life and the significance of employability across context – indeed, it is the confrontation of these differences from which much new learning emerges. At the same time, there are limitations or challenges to internationalisation using digitalisation, and a key one is the uneven access to digital infrastructure across the two contexts, as well as the limitations to boding in an online only environment.

The article concludes by arguing that to develop a truly international educational environment, digital technologies should also be organized alongside real-world interactions in a way that enhances students' interaction,

involvement, and feeling of belonging. Done correctly, long-term sustainable international collaboration using digital technology, and thereto connected pedagogics, can bring the world closer, and can also reduce the economic and environmental cost of internationalization.

Digging deeper: A research-led approach to enhance students' reflective practice

Lee Rusznyak, *School of Education, University of the Witwatersrand, South Africa,*
lee.rusznyak@wits.ac.za

Abstract

Reflecting in and on action is widely regarded as a mechanism for learning in practice (Schön 1987). However, in a study of the reflective practices of a cohort of pre-service teachers, we were concerned to notice that some final-year pre-service students were still writing superficial, descriptive accounts of their classroom experiences. Mentors and lecturers had repeatedly urged them to "probe more deeply". In response to the feedback, many wrote more extensively but the focus, depth and structure of their reflections remained unchanged. This paper reports on a series of interventions that used a research-led approach to empower students to reflect more deeply and more meaningfully on their work-based experiences. Drawing on Cochran-Smith and Lytle's (1999) influential distinction between knowledge for-, in- and of- practice, I show how our interventions designed to promote deeper reflection required that set up different relations between knowledge and their work-based practices and required students to shift between them.

First, we investigated whether the questions intended to guide students' reflections unintentionally obscured an expectation their reflections should be both theoretically informed and contextually focused. Our questions were typical of the prompts used across South Africa: How did your lesson go? What worked? What didn't? What can you do differently to improve next time? Our analysis showed that the questions set up a 'theory-practice divide' that inadvertently constrained the very learning they intended to support (Walton & Rusznyak, 2020). In light of these insights, we drew on the conceptual tools offered by Legitimation Code Theory (Maton, 2014) to revise the prompts. The revised questions were designed to set up 'semantic waves' between students' coursework insights and their experiential learning (Maton, 2013). An analysis of students' reflections using the revised prompts show that two-thirds of participants wrote reflections that demonstrated more complex shifts across the semantic plane (Rusznyak, 2022). However, despite this change, 30% of students' reflections continued to offer little more than a narrative account of their daily actions. A further intervention was necessary to ensure deeper reflective practice across the cohort.

Students were required to undertake a self-study of the semantic waving in their own written reflections. Through doing so, students became more aware of the extent to which they were making iterative shifts between particular events in the classroom and the principled knowledge, contextual priorities and ethical orientations that underpinned their teaching. Their subsequent reflections showed far more sophisticated pathways across the semantic plane and they became more intentional about the complex knowledge-building that reflecting demands. Although Cochran-Smith and Lytle (1999) argue that knowledge for-, in- and of- practice require mutually exclusive approaches to professional preparation programmes, this study shows how all three can collectively enhance authentic and robust professional learning. First, our approach positioned reflective practice required that students recruit generalised insights from coursework (learnt as 'knowledge-for practice') to interpret the particular events and interactions that they observe or experience in teaching contexts. Second, it invited students to draw on their learning-in-practice to extend or challenge what they learnt in university coursework. Thirdly, the self-study of their own reflective writing constituted a knowledge-of-practice intervention. It conveyed to pre-service teachers that education practices can be analysed and interrogated, with the view to extending their professional learning. In this way, students are variously positioned as students of education, thoughtful classroom practitioners and researchers of teaching. The combination of these approaches creates conditions of possibility for reflections with conceptual integrity, contextual responsiveness and professional insight.

References

Cochran-Smith, M. & Lytle, S. 1999. Relationships of knowledge and practice: Teacher learning in communities. *Review of Research in Education*, 24, 249–306.

Maton, K. 2014. *Knowledge and Knowers: Towards a realist sociology of education.* Oxford: Routledge.

Maton, K. 2013. Making semantic waves: A key to cumulative knowledge-building. *Linguistics and education*, *24*(1), pp.8-22.

Rusznyak, L. 2022. Using semantic pathways to reveal the 'depth' of pre-service teachers' reflections. *Education as Change*, 26(1), 1-24. http://dx.doi.org/10.25159/1947-9417/10013

Schön, D. A. 1987. *Educating the Reflective Practitioner: Toward a New Design for Teaching and Learning in the Professions.* San Francisco, CA: Jossey-Bass.

Walton, E. & Rusznyak, L. 2020. Cumulative knowledge-building for inclusive education in Initial Teacher. *Education European Journal of Teacher Education 1(43),* 18-37. https://doi.org/10.1080/02619768.2019.1686480

Supervising in Teacher education program as part of profession and school development

Annette Mitiche*, *doktorand, Göteborgs Stad och Göteborgs universitet,*
annette.mitiche@educ.goteborg.se

Jörgen Dimenäs, *professor, Högskolan Dalarna*

Tommy Gustafsson, *universitetslektor, Chalmers*

Abstract
In Swedish teacher education, the school-based courses (VFU) form a central part in the development of student teachers' professional competence and professional identity (Hammond et al., 2005). Every preservice teacher, regardless of their educational orientation, currently has VFU equivalent to 30 ECTS credits. There is reason to draw attention to the fact that there are proposals to reduce the VFU of some teacher programs to 20 credits (Increased quality in teacher training and more teachers in schools, 2021). Hence there is reason to pay attention to the issue of becoming a teacher in school activities in relation to developing knowledge about becoming a teacher.

One of the starting points of this study is the question of whether the role of supervisor during the preservice teacher's school-based part means that one also contributes to developing not only the preservice teacher's profession and teacher identity, but also one's own, with the possibility of collegial learning that stimulates the school's development (Taflin & Dimenäs, 2022). It also provides the opportunity for collaboration with the preservice teacher's university to develop new knowledge and insights based on experience.

The present study therefore aims to deepen the knowledge of how pre-school teachers and primary school teachers perceive their own supervisor role in relation to professional and school development as part of teacher education. As a theoretical model, we have used Scherp's (2013) VISKA model in the study, where a holistic perspective on everyday problems and dilemmas can form starting points for both profession and school development. Supervisors and student teachers find themselves in precisely such situations during the student teacher's work-based training.

The data collection methods used consisted of individual interviews and focus group interviews with experienced tutors for pre-school and primary school teacher students. The study is ongoing and so far 3 preschool teachers have been interviewed (focus group) and individual interviews have been done with a middle school teacher Ma/NO, a teacher in technology, a teacher in SV/SO and a teacher in upper school in SO. The intention is that the study will be expanded to also interview teachers from high school. All interviewed teachers are selected based on long experience (between 5–13 years) as supervisors for preservice teachers. The focus group interview took 1.5 hours, the other two between 50–60 minutes. The interviews were conducted via TEAMS with both video and audio being recorded. One of the article's authors has done all the interviews and transcription. The analysis of the collected data has been done in collaboration with all the authors of the article.

Preliminary results show that there is a relationship with supervisors' own professional development and strengthening of their own teacher identity where supervision of preservice teachers is perceived as valuable and important for the individual teacher. There is a genuine will to support preservice teachers to become future professional teachers with the aim of educating and supporting children and students towards a future democratic society.

All supervisors from both preschool and primary school point out that supervising gives the teacher the opportunity to reflect on their own teaching role and thus strengthen their own teacher identity by putting into words an intuitive un-reflected knowledge in a theoretical context.

Professionalism is strengthened if it can be expressed through a meta-language and where guidance takes place based on pronounced conversation methods. The study also shows that there is a need for organization and freedom to translate experiences and knowledge into a collegial reflection on one's own school that favours one's own school development, which can, for example, be done together at the school and together with the institution that runs the teacher training. In addition, all the supervisors interviewed state that they have experience and knowledge that can be used in teacher training.

Both from preschool and primary school, it is pointed out that being a preschool/primary school teacher is being in a leadership profession where a collaboration with putting experiences and knowledge into a theoretical perspective could contribute to a common view of one of the pillars of the teaching profession. Another example is how supervisors meet and respond to children and students based on ethical issues.

A detail in the study that differentiates preschool teachers and primary school teachers is that the supervisors from the preschool state that they have some space to supervise and that they are also invited to the course introductions by the student teacher's institution.

The study's conclusions are that supervision of preservice teachers gives the individual teacher the opportunity for their own professional development. Both pre-school teachers and teachers from primary school expressed that they felt important as supervisors to future colleagues, but also that their experiences and knowledge should be used more by both the individual school as well as by the preservice teacher's institutions.

References:

Darling-Hammond, L., Bransford, J., & National Academy of Education. (2005). *Preparing teachers for a changing world: What teachers should learn and be able to do*.

Taflin, E. & Dimenäs, J. (2022). Perspektiv på handledning och den handleddes roller i lärarutbildningens verksamhetsförlagda delar. *Nordisk Tidskrift för Allmän Didaktik (8),* 1, förpublicerad online.

Scherp, H.-Å. (2013) *Lärandebaserad skolutveckling. Lärarglädjens förutsättningar, förverkligande och resultat.* Lund: Studentlitteratur.

Regeringsbeslut U2021/00301. *Ökad kvalitet och fler lärare i skolan.32*(7), 513–531. https://www.regeringen.se/rattsliga-dokument/departementsserien-och-promemorior/2021/01/okad-kvalitet-i-lararutbildningen-och-fler-larare-i-skolan/

Work-place learning: A way to develop entrepreneurial employees?

Nataliya Galan, *School of Business, Economics and IT, University West, Trollhättan, Sweden,*
nataliya.galan@hv.se

Key words: entrepreneurial employee, intrapreneurs, workplace learning, entrepreneurial learning, intrapreneurial learning, intrapreneurship

Extended abstract

The current study has its starting point of departure in a broader understanding of entrepreneurship, which acknowledges that new entrepreneurial opportunities can be recognised and pursued by individuals in different ways. Thus, it can be done by establishing new ventures or by identifying and developing such opportunities within existing organisations (Shane & Venkataraman, 2000). Irrespective of its form, entrepreneurship can be understood as a behavioural process, which implies that individuals, engaged in this process, are involved (alone or in teams) in a broad range of goal-oriented activities. Previous research in the stream, predominantly focusing on venture creation behaviours, recognises that entrepreneurs, through different learning experiences, develop knowledge enabling them to recognise and pursue entrepreneurial opportunities (Politis, 2005; Politis et al., 2019). This reasoning should be equally relevant to entrepreneurial behaviour of employees within existing organisations (Bosma et al., 2012). Entrepreneurial employees, who can also be referred to as intrapreneurs (Bosma et al., 2012), commonly demonstrate behaviours, which are similar to those of entrepreneurs, i.e., proactiveness, risk-taking, and innovativeness (Antoncic & Hisrich, 2003). These employees are expected to contribute most to the value creation in their employing organizations by acting at the organisational "frontier" and "not the core" (Antoncic & Hisrich, 2003). Such behaviours enable their employing organisations to "depart from the customary" (Antoncic & Hisrich, 2003).

Intrapreneurs are viewed as exceptional learners (Lackéus et al., 2020), who learn from multiple sources (colleagues, partners, competitors and other stakeholders) as well as through multiple experiences (e.g., observing, doing, re-doing) (Lackéus et al., 2020). Further, several studies emphasize the importance of work-related contexts for developing of intrapreneurial behaviour of employees and suggest that both formal (Mustafa et al., 2018) and informal learning (Keith et al., 2016) opportunities at work play an important role in transforming relevant experiences into entrepreneurial knowledge and herewith shaping entrepreneurial behaviour of employees. At the same time, rigid organisational structures and cultures, certain types of work task design as well as job role clarity may also affect the process of "intrapreneurial" learning in existing organisations (de Jong et al., 2015). This indicates that intrapreneurial learning, being a form of entrepreneurial learning, may develop in a different, compared to entrepreneurial learning, way and, accordingly, have specific dimensions. However, previous research provides limited understanding of how entrepreneurial employees learn at their workplaces (Manuti et al., 2015) as well as where (e.g., within/outside organisational boundaries) (Manuti et al., 2015). The current study aims, via integration of entrepreneurial learning, entrepreneurship, intrapreneurship, and workplace learning literature to advance the current understanding of the role of workplace learning in developing entrepreneurial employees. In doing so, the study adopts a broad approach to defining workplace learning (Stern & Sommerlad, 1999), acknowledging that there exist different degrees of separation between 'learning' and 'work'. Thus, this implies that learning activities can occur within and outside organisational boundaries, as well as they can be integrated with or disintegrated from working tasks and assignments (e.g., Galan, 2018).

The study results suggest that intrapreneurial behaviours of employees appear to be the outcome of employees learning through their work tasks which have multiple roles in the process of such learning. First, through their work tasks employees in existing organisations are likely to be exposed to various learning opportunities (both within and outside organisational boundaries). Second, the work task–learning opportunity fit appears to increase the employees' engagement in learning opportunities and, thus, trigger their pursuit. Finally, task novelty is suggested to moderate the relationship between the pursuit of learning opportunities by employees and developing by them intrapreneurial behaviours.

The study contributes to the literature on entrepreneurial learning in existing organisations by clarifying the enabling role of work tasks in this process and incorporating two features of work tasks, namely their fit to learning opportunities and novelty. Future research is encouraged to incorporate other characteristics of work tasks, such as task variety, task complexity, task scope, task importance, task structuredness as well as empirically test newly established relationships.

References

Antoncic, B. & Hisrich, R. D. (2003). Clarifying the intrapreneurship concept. *Journal of Small Business and Enterprise Development*, 10(1): 7–24.

Bosma, N., Wennekers, S. & Amorós, J. E. (2012). *GEM 2011 Extended Report: Entrepreneurs and Entrepreneurial Employees Across the Globe.* Global Entrepreneurship Research Association (GERA).

de Jong, J. P. J., Parker, S. K., Wennekers, S. & Wu, C. (2015). Entrepreneurial behavior in organizations: Does job design matter? *Entrepreneurship Theory and Practice,* 39(4): 981–995.

Galan, N. (2018). "One foot in industry, the other in academia": Why professional services want adjunct professors as employees? *Baltic Journal of Management*, 13(4): 433–450.

Keith, N., Unger, J. M., Rauch, A. & Frese, M. (2016). Informal learning and entrepreneurial success: A longitudinal study of deliberate practice among small business owners. *Applied Psychology*, 65: 515–540.

Lackéus, M., Lundqvist, M., Williams Middleton, K. & Inden, J. (2020). *The entrepreneurial employee in public and private sector – What, Why, How*. Luxembourg: Publications Office of the European Union.

Manuti, A., Pastore, S., Scardigno, A. F., Giancaspro, M. L. & Morciano, D. (2015). Formal and informal learning in the workplace: A research review. *International Journal of Training and Development*, 19(1): 1360–3736.

Mustafa, M., Gavin, F. & Hughes, M. (2018). Contextual determinants of employee entrepreneurial behavior in support of corporate entrepreneurship: A systematic review and research agenda. *Journal of Enterprising Culture*, 26(3): 285–326.

Politis, D. 2005. The process of entrepreneurial learning: A conceptual framework. *Entrepreneurship Theory and Practice*, 29(4): 399–424.

Politis, D., Gabrielsson, J., Galan, N. & Abebe, S. A. (2019). Entrepreneurial learning in venture acceleration programs. *The Learning Organization*, 26(6): 588–603.

Shane, S. & Venkataraman, S. (2000). The promise of Entrepreneurship as a field of research. *Academy of Management Review*, 25(1): 217–226.

Stern, A. & Sommerlad, E. (1999). *Workplace Learning, Culture and Performance*. London: Institute of Personnel and Development.

Problem solving, reflection and lifelong learning in the junction between theory and practice

Mikael Andersson* *University West, Sweden,*
mikael.andersson.2@hv.se

Ulf Andersson, *University West, Sweden,*
ulf.andersson@hv.se

*Corresponding author
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Abstract

In 2002 University West was commissioned by the government to develop forms for work integrated learning (WIL) as part of the work with pedagogical renewal of higher education. As a result of this assignment, WIL is now a deeply rooted philosophy and cornerstone of the university but also the main principle for pedagogical approach. We believe that knowledge, both theoretical and practical, is acquired everywhere and not only in institutions of higher learning. In other words, we are striving to connect university studies with everyday work life and the surrounding society.

The purpose of this paper is to describe and evaluate a strategy for improving student awareness and skills for problem solving, reflection and lifelong learning in the junction between theory and practice. At the center of our focus are students from our bachelor's degree programme 3D-animation and visualization and a course on simulation and particle based effects. This is a challenging subject to teach since knowledge, tools and process is evolving rapidly and we rewrite the course curricula every year.

The strategy consists of adding five themes focused on reflection and problem solving spread over the weeks of the course, in addition to the more direct subject-related areas. For each theme the students recieved reading material giving an overview of each theme, and then reflection based questions aimed at connecting the theme of each week to the subject of the course. The themes were Lifeling Learning, MoSCoW prioritisation, Schöns desriptions of design challenges and wicked problems and finally Fraylings ideas of Research through design and Schöns Conversation with the material. For the last week, the students wrote a summary of the entire course using the themes they had studied.

At first there was some resistance among the students, and it was not easy for them to see the value of these assignments, instead their focus was on the more technical aspects of the course. However, as the course progressed a majority of the students started to see the point of these more reflective based assignments. One example where this became apparent was during the weekly presentations of the technical assignments. While some of the students still struggled with integrating the reflective assignments with the more technical parts of the course, others started to use the terminology and reasoning from the reflective assignments when talking about how they approached the problems they faced when solving the technical assignments. Having the students equipped with these new approaches also facilitated talking about problem solving and learning strategies, both during the course where this strategy was tested, as well as a subsequent course.

The strategy was evaluated by analysing the written and oral presentations and reflections of the students, with special attention being paid to their problem solving and their strategies when approaching new technologies and tools. In addition to this, we also observed their reasoning about the theories that was embedded in the tools, i.e not just talk about how to do things in the software, but also the theories and principles underlying the software.

Overall, the aim of the strategy was to train the students on problem solving and learning through experimentation, design and reflection. While one single course is a very short time to practice this, differences in reasoning and strategies in the students from the beginning of the course to the end could be seen. This was both in their written reports as well as their oral presentations. Areas where improvements could be seen was more abstract reasoning, reflection on problem solving, priorities, and the ability to connect and compare different areas of the course. One theme that also was recurring in the texts was the balance between chaotic exploration and structured learning. These are skills that are valuable in a changing industry where they will need to learn new tools and develop new workflows constantly. Overall, a conclusion here is that learning to learn is far more important than learning a specific tool or skill.

The Critical Friend method as a tool for facilitating vital work/learning spaces; creating co-ownership, innovation, entrepreneurial behaviour and access

Dr. Alexander Grit*, *Hanze University of Applied Sciences Groningen and Alfa-college*
a.g.grit@pl.hanze.nl

Drs. Natalie Gumbs, *Hanze University of Applied Sciences Groningen*

Dr. Maaike de Jong, *NHL Stenden University of Applied Sciences Leeuwarden*

Dr. Diedrich Bakker, *Hanze University of Applied Sciences Groningen*

Ciska Henstra BA, *University of Groningen*

*Corresponding author
Keywords Critical Friends, WIL, Interaction design, entrepreneurial education, multilevel and interdisciplinary, innovation and access

Introduction

It can be argued that many potentialities for a more innovative, integrative and inclusive society are left unused by traditionally organising education and work.

The research group Entrepreneurship in Transition, a collaboration between Hanze University of Applied Sciences Groningen and Alfa-college, has conducted five years of applied research which seeks a collaborative approach to stimulate the entrepreneurial mindset and an innovative sustainable ecosystem in which unsought findings can be found. The focus is on organising work/learning spaces where different groups meet and interact in settings where personal, organizational and regional challenges are the focal point. These challenges directly connect with global sustainability challenges and personal, entrepreneurial, social and technological advances.

Meeting, exploring and interacting are important aspects of the work/learning spaces which are guided by the Critical Friend method. The guiding principles of the Critical Friend method fit in very well with the principles of Work Integrated Learning (WIL). WIL (Call for papers, 2022) "is about learning through a lively exchange of ideas, reflective conduct, and active participation in a co-creation atmosphere". Professors Wolfensberger, Bakker and Grit from Hanze UAS conduct research in line with the WIL philosophy and focus on the multi-level and interdisciplinary aspects of learning and working. Which contributes to forming professional knowledge by designing for Work-integrated Learning.

Research purpose

The critical friend method works, although there is a general feeling that the method has more potential. Especially the growth, scalability and continuity of the various Critical Friend network seem to be an issue, The purpose of the research is that through the use of different research techniques continuous monitoring takes pace and innovations are integrated into the Critical Friend Method at predefined moments and shared with network partners. Through research and design meetings *version II* of the method has been evaluated during the third research cycle. During this third cycle, research outcomes are translated into design criteria for *version III*.

Critical Friend method

The Critical Friend method connects a critical friend to a learner. The critical friend will give their expertise and time by asking challenging questions aimed at bringing clarity and new insights. The method involves interactive training followed by membership in critical friend circles. The term 'friend' is essential as this must be a trusted person, willing to listen and offer constructive criticism to advocate for the learner's success. It can also be seen as a constructive feedback method. The Critical Friend method aims to strengthen networks and stimulate knowledge circulation within these networks. It strives for reinforcing the entrepreneurial behaviour of the participants and self-direction. The Critical Friend method intents to contribute to the dynamics of the interactions between people with different backgrounds. It also contributes to an innovative region because local and regional themes are discussed and treated on a multilevel and multidisciplinary basis. Research shows that the potential innovativeness of participants of the critical friend method is strengthened (Sonnier & Grit, 2022). In exploratory research, Sonnier and Grit (2022) examine the conditions that should be met for missions that can trigger the development of an innovative system that can support cities in a circular transition. The outcome shows that the use of the Critical Friend method enables self-reflection and new ways of framing a challenge that opens the paths for unexpected discoveries and innovations. The method has also been recognised as an Interreg Europe Good Practice (Taking initiative; Becoming a Critical Friend | Interreg Europe - Sharing solutions for better policy).

Method

Qualitative research outcomes during the third research cycle are generated through focus groups, observations, interviews and written self-reflections from students. This data was coded into themes and during the design criteria meeting themes were shared with partners and translated into design criteria for the next version.

This paper shows the development of the second version into the third version. The data has been collected during the BIP Erasmus exchange Sustainable Entrepreneurship week in Antwerp 2022.

Research outcomes

During the coding phase, four main themes became apparent; firstly *Sharing and caring*, secondly, *Sessions continue after the assigned time*, thirdly *New found combinations* and fourth *Coordination and organizational hinder*. A short clarification; both students, entrepreneurs and teachers with different backgrounds interact intensively and this indicated that they cared for each other. Teachers from different institutions started interacting as a team to facilitate the method. Potential strong sustainable combinations were formed. Since the critical friend method involves a great number of partners, coordinating is a crucial aspect. Several participants indicated that initiating the circles is hard work and that more groups could be included. Participants indicated that during working as a critical friend they waited for the next step and that they would like tools or a mandate to do so. During design sessions with partners in Groningen, ideas indicating *developing co-ownership* and *facilitating access* were launched.

Conclusion

Although the method works to connect the unconnected and enhance entrepreneurial behaviour, more emphasis could be placed on integrating the training, participation in the circles and setting up their circles. The goal for the next cycle is to turn the various participants into co-owners. Invite participants to create their circles, and show the added value of having circles. To stimulate co-ownership and at the same time, improve coordination and organisation, The following tools will be developed: databases, training, information sessions and an informational booklet about hosting the circles.

References

Grit, A. (2014). *Messing around with serendipities. In Disruptive tourism and its untidy guests* (pp. 122-141). Palgrave Macmillan, London

Sonnier, E, and Grit, A, (2022). *A Narrative for Circular Economy in Cities: Conditions for a Mission-Oriented Innovative System.* City and Environment Interactions.

West University, (2022). *Call for papers WIL conference.* https://www.hv.se/en/meet-university-west/events-conferences/wil-conference/

Exploring Social Representations of Leadership Development.

Designing for Work-Integrated Learning

Ingela Bergmo Prvulovic, *Associate professor, Jönköping University,* *ingela.bergmo-prvulovic@ju.se*

Gunilla Avby, *Associate professor, Stockholm University,*

Annika Engström, *Associate professor, Jönköping University*

Sofia Kjellström, *Professor, Jönköping University*

Anna Fabisch, *PhD student, Jönköping University*

Extended Abstract

This paper explored social representations of leadership and leadership development shaping an organizations leadership development system (LDS). This study is based on the initial phase of a 4-year collaborative research project on LDSs, adopting an interactive research approach to co-produce knowledge through joint meetings and learning workshops (Ellström et al., 2020). The research project involves researchers from different disciplines, and five organizations operating in different business domains. The participating organizations vary in terms of size, strategies, markets, processes, products, and ways of organizing, but they all share a common interest in how to develop sustainable approaches to leadership development. An LDS encompasses all the methods and practices in an organization that contribute to developing and producing effective leaders (McCauley et al 2010). The importance of understanding the characteristics of the context the LDS is embedded in has been highlighted in a previous study (Avby et al., 2022), and serve as a point-of-reference in this study. However, less is known of what underlying assumptions an LDS is based upon. This study paid attention to the underlying values, ideas, and perspectives on leadership and leadership development that shape an organizations' ways of thinking, communicating, and acting in the LDS. We suggest that the potential to develop a more deliberate practice of leadership development was enhanced by exploring and articulating the tacit knowledge and assumptions that an LDS rests upon.

Aim

The aim of this study was to explore how socially and contextually shaped assumptions on leadership and leadership development can be visualized and practically applied to develop the leadership in the organization. The question addressed was how the awareness of underlying assumptions can support the methods and practices applied, and in what way the disclosing of underlying ideas, values and practices may foster work-integrated learning?

Design and methods

From a social representation theory approach (Moscovici, 2001, Jovchelovitch, 2007, Markova, 2003, Bergmo-Prvulovic, 2015), underlying assumptions of leadership and leadership development were explored. In the collaborative project an initial mapping of the participating organizations' LDSs has been conducted, based on different sources of data. The results of this mapping have been presented through a metaphorical analysis (Avby et al., 2022), in which the participating organizations are described with certain metaphors of their LDS. This study paid specific attention to the organization entitled *The Self-Managing Team*, and added to the initial stage of mapping LDSs by exploring the underlying assumptions that underpins the expressions and formulations on leadership and leadership development found in the organization's documents, websites, formulations in meetings and strategies.

The exploration of social representations of LDSs was based upon the free association method (Abric, 1995), further developed, and used in studies exploring social representations of similar abstract and complex phenomena, such as career (Bergmo-Prvulovic, 2013: 2015). The method consists of questions, words and series of words given to the respondents who spontaneously write down their immediate associations towards a specific concept and complex phenomenon with a gradual deepening of questions related to specific words, series of words. In this study, a digital enquiry was created in *Esmaker*. The enquiry was designed to ask for respondents spontaneous, immediate thoughts on words, and series of words related to leadership and leadership development. The gradually deepening of questions, were designed by paying attention to the five dimensions of representations suggested by Jovchelovitch (2007), by exploring who are concerned, why and for what leadership is needed, what is the content

of leadership, when it works and doesn't work, when and how it occurs as well who is responsible, whose engagement and what conditions are needed. This study was based on 19 respondents' answers all member in the Self-Managing Team. They were selected by the organization, as identified having important roles and functions in the company's LDS. A facilitator in the organization introduced an online enquiry with 12 questions, given one by one to the respondents, providing 1-2 minutes for each. The respondents wrote down their associations to each question, some background data, and questions about leadership identity.

The analytical procedure was made according to qualitative content analysis method as the basic procedure of qualitatively exploring social representations (Bergmo-Prvulovic, 2013; 2015). Expressions were numbered with a certain code for each respondent related to each answered question, thereafter each textual units were condensed, meaning units were coded and grouped into constitutive elements that builds up preliminary and primary themes generating a web of social representations of LDS for the group of respondents.

Preliminary results

The results disclosed a web of underlying social representations shaping the LDS in *The Self-Managing Team*. The social representations shape a basic, contextually characterized system of values, ideas, and practices, on which the company at present form their LDS. Given the collaborative design of the project, the results were fed back to the organization to validate the analytical procedure, as well as to support the designing for work-integrated learning and further knowledge use in the organization.

The results revealed the respondents' assumptions on leadership, leadership development, and self-leadership. These assumptions are clearly anchored in the organization's aim to build in self-management, as a collective way of working with leadership. However, the existing knowledge base encloses both commonalities and contradictions that needs to be further highlighted to create a sustainable LDS. Results showed both stable representations, that occur repeatedly throughout the material, and dynamic social representations, that express a negotiating character between different views, or as being antinomies of thoughts. By identifying and raising awareness of ambiguities deriving from the results, a base of designing for reflective work-integrated learning was provided. A joint learning process to discuss how the results could be utilized as a tool for work-integrated learning was initiated. Some challenges were recognized, and the organization especially addressed the need to work with a second step of workplace reflection. A first learning cycle was initiated to be continuously developed by involving the employees in the process.

In all, the contribution of the study explains the basis of leadership development practice, which unnoticed might create ambiguity in service delivery. The mapping of social representations of an LDS can be utilized as a tool for a more deliberate leadership development practice and highlight possibilities and challenges that need to be addressed for integrating methods and practices in everyday work.

References

Abric, J.C. (1995). Metodologi för datainsamling vid studiet av sociala representationer. In Chaib, M. & Orfali, B. Sociala representationer. Om vardagsvetandets sociala fundament. Göteborg, Daidalos AB.

Alvesson, M. & Spicer, A. (2012). A stupidity-based theory of organizations. J of Management Studies, 49(7), 1194-1220.

Avby, G., Engström, A., Kjellström, S., Bergmo-Prvulovic, I., & Fabish, A. (2022). Shaping leadership development systems to the work context. Paper presented at the OLKC Conference 2022, 7-9 september, 2022. Trollhättan, Sweden.

Avby, G. (2015). Professional practice as processes of muddling through: a study of learning and sense making in social work. Studies in Vocational and Professional Education, 8(1), 95-113.

Bergmo-Prvulovic, I. (2013). Social Representations of Career – Anchored in the Past, Conflicting with the Future. Papers on Social Representations. Vol. 22, No. 1, pp 14.1-14-27.

Bergmo-Prvulovic, I. (2015). Social Representations of Career and Career Guidance in the Changing World of Working Life: School of Education and Communication, Jönköping University

Bergmo-Prvulovic, I., & Hansson, K. (2019). Governance of teachers' professional development and learning within a new career position. Adult Education Discourse, 20, 157-178. doi:https://doi.org/10.34768/dma.vi20.17

Billett, S. (2001). Learning through work: workplace affordances and individual engagement, Journal of Workplace Learning, 13(5), 209 – 214.

Bolden, R., & Gosling, J. (2006). Leadership competencies: time to change the tune? Leadership, 2(2), 147-163.

Carroll, B. (2019). Leadership learning and development. In B. Carroll, J. Ford, & S. Taylor (Eds.), Leadership: contemporary critical perspectives (pp. 117-137). Sage.

Clapp-Smith, R., Hammond, M. M., Lester, G. V., & Palanski, M. (2019). Promoting Identity Development in Leadership Education: A Multidomain Approach to Developing the Whole Leader. Journal of management education, 43(1), 10-34. https://doi.org/10.1177/1052562918813190

Cullen, J., & Turnbull, S. (2005). A meta-review of the management development literature. Human Resource Development Review, 4(3), 335-355.

Day, D. V., & O'Connor, P. M. G. (2017). Talent development: Building organizational capability. In D. G. Collings, K. Mellahi, & D. G. Cascio (Eds.), The Oxford handbook of talent management (pp. 343-360). Oxford University Press.

Drath, W. H., McCauley, C. D., Palus, C. J., Van Velsor, E., O'Connor, P. M., & McGuire, J. B. (2008). Direction, alignment, commitment: Toward a more integrative ontology of leadership. The Leadership Quarterly, 19(6), 635-653.

Ellström, P.-E., Elg, M., Wallo, A., Berglund, M., & Kock, H. (2020). Interactive research: concepts, contributions and challenges. Journal of Manufacturing Technology Management, 31(8), 1517-1537.

Hammond, M. M., Clapp-Smith, R., & Palanski, M. (2017). Beyond (Just) the Workplace: A Theory of Leader Development Across Multiple Domains. The Academy of Management review, 42(3), 481-498. https://doi.org/10.5465/amr.2014.0431

Hezlett, S. (2016). Enhancing experience-driven leadership development. Advances in Developing Human Resources, 18(3), 369-389.

Hezlett, S., & McCauley, C. D. (2018). Employee development: The process and practice of work-related learning. In Ones et al. (Eds.), The SAGE handbook of industrial, work & organizational psychology. London: Sage.

Hirsh, Å., & Bergmo-Prvulovic, I. (2018). Teachers leading teachers - understanding middle-leaders' role and thoughts about career in the context of a changed division of labour. School Leadership & Management. doi:10.1080/13632434.2018.1536977

Jovchelovitch, S. (2007). Knowledge in context: Representations, community and culture. Routledge.

Mabey, C. (2013). Leadership Development in Organizations: Multiple Discourses and Diverse Practice. International Journal of Management Reviews, 15(4), 359-380. https://doi.org/10.1111/j.1468-2370.2012.00344.x

Marková, I. (2003). Dialogicality and Social Representations. The Dynamics of Mind. Cambridge: Cambridge University Press

McCauley, C. D., Kanaga, K., & Lafferty, K. (2010). Leader Development Systems. In E. Van Velsor, C. D. McCauley, & M. N. Ruderman (Eds.), The center for creative leadership handbook of leadership development. Wiley & Sons.

McCauley, C. D., & McCall Jr, M. W. (2014). Using experience to develop leadership talent: How organizations leverage on-the-job development. San Francisco, CA: John Wiley.

Moscovici, S. (1973). Foreword. In Herzlich, C. Health and illness. A social psychological Analysis. London. European Association of Experimental Social Psychology by Academic Press Inc. Ltd.

Moscovici, S. (2001). Social Representations: Explorations in Social Psychology. New York University Press: New York.

Nilsen, P., Nordström G. & Ellström, P-E. (2012) Integrating research-based and practice-based knowledge through workplace reflection. Journal of Workplace Learning, 24(6), 403-415.

Probert, J., & Turnbull James, K. (2011). Leadership development: Crisis, opportunities and the leadership concept. Leadership, 7(2), 137-150.

Uhl-Bien, M., & Ospina, S. M. (2012). Paradigm Interplay in Relational Leadership: A Way Forward. In M. Uhl-Bien & S. M. Ospina (Eds.), Advancing relational leadership research: A dialogue among perspectives, (pp. 537-580). IAP.

Van Velsor, E., McCauley, C. D., & Ruderman, M. N. (Eds.) (2010). The center for creative leadership handbook of leadership development. 3rd ed. San Francisco, CA: John Wiley.

Vogel, B., Reichard, R.J., Batisti_c, S. and _Cerne, M. (2021), "A bibliometric review of the leadership development field: how we got here, where we are, and where we are headed", Leadership Quarterly, Vol. 32 No. 5, doi: 10.1016/j.leaqua.2020.101381.

Zaar, S., Van den Bossche, P., & Gijselaers, W. (2020). How business students think about leadership: a qualitative study on leader identity and meaning-making. Academy of Management Learning & Education, 19(2), 168-191.

Zaar, S., Van den Bossche, P., & Gijselaers, W. (2021). New avenues for leadership education and development: shaping leader identity through meaning-making from experiences. In Handbook of Teaching and Learning at Business Schools (pp. 249-263). Edward Elgar Publishing.

What are the prerequisites for a successful Industrial PhD education collaboration?

Anna Karin Olsson, PhD*, *School of Business, Economics and IT, University West, Sweden, a*nna-karin.olsson@hv.se

Iréne Bernhard, PhD, *School of Business, Economics and IT, University West, Sweden* irene.bernhard@hv.se

*Corresponding author

Extended abstract

Background
University-industry collaboration is a widespread phenomenon in response to complex societal challenges. All sectors of society struggle to meet contemporary challenges by including various perspectives and competences (Bernhard and Olsson, 2020; Olsson et al., 2021; Stegeager and Thomassen, 2021). There is a need to continuously learn at work and redevelop work practices by relating to new concepts, technologies, and organizational principles. University-industry interactions are of importance for mutual learning in higher education as well as in industry (Bölling & Eriksson, 2016; Olsson et al., 2021). Universities have an essential role supporting life-long learning and acting as knowledge hubs embedded in society (Lind et al., 2013) providing trained researchers prepared to meet these challenges (Altbach et al., 2019; Hayes, 2021). There is an emerging interest for collaboration with university in third-cycle education as the importance of PhD education is recognized in contemporary society (Bernhard & Olsson, 2020; Bin et al., 2016; Borrell-Damian et al., 2010; Gill & Mullarkey, 2015; Gustavsson et al., 2016; Jones, 2018; Roolaht, 2015). European higher education policies call for PhD educations that are transformed along with societal needs and labor markets for PhDs. Especially since PhD education does not merely aim for academic careers (Malfroy, 2011; Santos & Patricio, 2020; Valencia-Forrester, 2019). Industrial PhD education is emerging as one way of increasing collaboration between university and work-life during the PhD education. Industrial PhD students here refer to students who originate from and are fully employed in industry (industry funded) during their PhD education, i.e., the company is investing in an employee to become a PhD. Accordingly, industrial PhD students are acting in the intersection of academia and work-life, but with the same academic demands as traditionally enrolled academic PhD students. One transdisciplinary approach to increase collaboration between university and society is work-integrated learning (WIL) to integrate theoretical knowledge with practice work bridging research, higher education, and practice for mutual learning outcomes (Bates, 2008; Billett, 2009; 2014; Gellerstedt et al., 2015; 2018; Rampersad, 2015). WIL is here applied as theory and a model for academia-society collaboration aiming at knowledge exchange and research together with industry.

Aim
The aim of this study is to expand research on university-industry collaboration by focusing on industrial PhD education exploring the prerequisites for a successful industrial PhD education collaboration. This paper reveals the perspectives of industrial PhD students, university, and industry.

Methodology
Qualitative methods are applied to capture several disciplines and perspectives during three years (2019-2022). The empirical research context is University West in Sweden. The sample includes three categories of respondents (in total 38): 19 industrial PhD students within the three disciplines of Work-integrated Learning, Informatics with a specialization in WIL, and Production Technology; nine representatives from academia and 10 respondents from industry. The academy perspective was represented by the main supervisors and head of PhD education. The industry perspective was represented by industrial supervisors/mentors covering both the private and public sectors. WIL is applied as a theoretical lens to identify the perspectives of industrial PhD students, academia, and industry. All collected data was analysed to identify patterns and themes following iterative phases, as the perspectives of industrial PhD students, academia and industry were explored along the progression of the theoretical framework and collected data.

Findings and Conclusion
Findings show that industrial PhD students are contributing to learning by acting in the intersection of university and industry across PhD education and research. The mutual benefits of industrial PhD education collaboration

such as access to data and current research, contextual understanding, are strongly emphasized by respondents. The relationship embraces industrial PhD education, research and collaboration generating work-integrated learning and understanding across sectors and industries. However, this study implicates that the following prerequisites need to be considered by university and industry to reach a successful industrial PhD education collaboration: (i) To operationalize continuous activities and processes that increase and strengthen the *understanding and expectations* during the entire industrial PhD education. Continuous dialogues and close interactions are needed to build long-term relations and trust for knowledge creation by operationalizing the collaboration in actions, practices, and routines over time. (ii) To design detailed *formal agreements* for industrial PhD education collaboration to avoid conflicts of interest and negative impacts on the industrial PhD students' work conditions. (iii) To continuously maintain activities for industrial PhD students' *inclusion and access* to dual contexts to ensure belonging, visibility and legitimacy. (iv) To *integrate research in practice and practice in research*. The scope of the industrial PhD students' thesis needs to be carefully anchored in industry and research to achieve an integration of theory and practice based on a mutual understanding of the work-integrated learning approach.

There are limitations as this study originates from one single university. The study was partly conducted during the COVID-19 pandemic which may have affected the results. Further research is of importance to deepen and broaden work-integrated learning in third-cycle collaborations to meet the demands and development of contemporary society.

Acknowledgement

References
Altbach, P. G., Reisberg, L., & Rumbley, L. E. (2019). *Trends in global higher education: Tracking an academic revolution*. Brill. https://brill.com/view/title/36570

Bates, M. (2008). Work-integrated curricula in university programs. *Higher Education Research & Development*, 27(4), 305-317. https://doi.org/10.1080/07294360802406775

Bernhard, I. & Olsson, A. K. (2020). University-industry collaboration in higher education: Exploring the informing flows framework in industrial PhD education. *Informing Science: The International Journal of an Emerging Transdiscipline*, 23, 147-163.

Billett, S. (2009). Realizing the educational worth of integrating work experiences in higher education. *Studies in Higher Education*, 34(7), 827–843. https://doi.org/10.1080/03075070802706561

Billett, S. (2014). Learning in the circumstances of practice. *International Journal of Lifelong Education*, 33(5), 674–693. https://doi.org/10.1080/02601370.2014.908425

Bin, A., Salles-Filho, S., Colugnati, F. A. B., & Campos, F. R. (2016). The 'added value' of researchers: The impact of doctorate holders on economic development. In L. Gokhberg, N. Shmatko, & L. Auriol (Eds.), *The science and technology labor force*: *The value of doctorate holders and development of professional careers. Science, Technology and Innovation Studies* (pp. 317-342). Springer International Publishing. https://doi.org/10.1007/978-3-319-27210-8_14

Borrell-Damian, L., Brown, T., Dearing, A., Font, J., Hagen, S., Metcalfe, J., & Smith, J. (2010). Collaborative doctoral education: University-industry partnerships for enhancing knowledge exchange. *Higher Education Policy*, 23(4), 493–514. https://doi.org/10.1057/hep.2010.20

Bölling, M., & Eriksson, Y. (2016). Collaboration with society: The future role of universities? Identifying challenges for evaluation. *Research Evaluation*, 25(2), 209–218. https://doi.org/10.1093/reseval/rvv043

Gellerstedt, M., Bernhard, I., Lundh Snis, U., & Svensson, L. (2018, November). Work-integrated Learning: Increasing societal impact by decreasing the gap between research and practice. In *Proceedings of the 11th Annual International Conference of Education, Research and Innovation* (pp. 9337–9345). Seville, Spain: International Academy of Technology, Education and Development (IATED). https://doi.org/10.21125/iceri.2018.0732

Gellerstedt, M., Johansson, K., & Winman, T. (2015). Work integrated learning – A marriage between academia and working life. *Journal of Systemics, Cybernetics and Informatics*, 13(6), 38–46. http://www.iiisci.org/Journal/PDV/sci/pdfs/IP005LL15.pdf

Gill, T. G., & Mullarkey, M. (2015). The interdisciplinary business doctorate for executives: A novel way to bridge academic research and practice. *Systemics, Cybernetics and Informatics*, 13(6), 116–121. http://www.iiisci.org/Journal/PDV/sci/pdfs/ZA252RN15.pdf

Gustavsson, L., Nuur, C., & Söderlind, J. (2016). An impact analysis of regional industry–university interactions: The case of industrial PhD schools. *Industry and Higher Education*, 30(1), 41–51. https://doi.org/10.5367/ihe.2016.0291

Hayes, S. (2021). *Postdigital Positionality: Developing powerful inclusive narratives for learning, teaching, research and policy in Higher Education*. Brill. https://doi.org/10.1163/9789004466029

Jones, M. (2018). Contemporary trends in professional doctorates. *Studies in Higher Education*, 43(5), 814–825. https://doi.org/10.1080/03075079.2018.1438095

Lind, F., Styhre, A. & Aaboen, L. (2013). Exploring university-industry collaboration in research centres. *European Journal of Innovation Management*, 16(1): 70–91.

Malfroy, J. (2011). The impact of university–industry research on doctoral programs and practices. *Studies in Higher Education*, *36*(5), 571–584. https://doi.org/10.1080/03075079.2011.594594

Olsson, A.K., Bernhard, I., Arvemo, T. & Lundh Snis, U., (2021). A conceptual model for university-society research collaboration facilitating societal impact for local innovation. *European Journal of Innovation Management,* 24(4): 1335-1353.

Rampersad, G. C. (2015). Developing university-business cooperation through work-integrated learning. *International Journal of Technology Management*, 68(3-4), 203–227. https://doi.org/10.1504/IJTM.2015.069664

Roolaht, T. (2015). Enhancing the Industrial PhD program as a policy tool for university–industry cooperation. *Industry and Higher Education*, 29(4), 257–269. https://doi.org/10.5367/ihe.2015.0259

Santos, P. & Patrício, M. T. (2020). Academic culture in doctoral education: Are companies making a difference in the experiences and practices of doctoral students in Portugal? *International Journal of Doctoral Studies*, 15, 685-704. https://doi.org/10.28945/4665

Stegeager, N. & Thomassen, A. O. (2021). Guest editorial, *Journal of Workplace Learning,* 33(3): 149-154.

Valencia-Forrester, F. (2019). Internships and the PhD: Is this the future direction of work-integrated learning in Australia? *International Journal of Work-Integrated Learning*, 20(4), 389–400. https://files.eric.ed.gov/fulltext/EJ1238354.pdf

Enhancing Quality through Work Integrated Learning and Collaboration Partnership

Lundh Snis, U, *University West (SWEDEN)*

Vallo Hult, H[*] *University West (SWEDEN); NU Hospital Group (SWEDEN) helena.vallo-hult@hv.se*

Smidt, H, *University West (SWEDEN)*

Carlén, U, *University West (SWEDEN)*

Johansson, K, *University West (SWEDEN)*

Fredriksson Larsson, U, *University West (SWEDEN)*

Påsse, M, *University West (SWEDEN)*

Linder, J, *University West (SWEDEN)*

* Corresponding author
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Abstract
For Sweden to be able to compete in the global economy, our students with a degree from higher education must be ready for a career in working life. Today's work life is facing a major ongoing transformation, characterized by increased complexity, higher specialization, and digitalization. This demands competencies beyond traditional theoretical knowledge, such as preparing for uncertainty and unknown outcomes (Barnett, 2000; Vallo Hult & Byström, 2021). Therefore, it is essential to engage students in learning to learn, i.e., lifelong learning so that the tools and methods for learning in higher education can also be developed through future work (Billett, 2014; Islind, Norström, Vallo Hult, & Ramadani Olsson, 2021). For University West, this means that our education programs must be developed in collaboration with industry partners from the surrounding society to provide a relevant and attractive education, which corresponds to the labour market's long-term competence needs. We want our students to develop abilities and skills that enable them to be part of and drive sustainable societal development in practice.

Work Integrated Learning (WIL) is University West's overarching profile, based on the concept of advanced knowledge – characterized by complex problem solving – and the mutual acknowledgment of advanced knowledge within the academy and among its partners. What characterizes WIL at University West is that we have developed and refined a combination of different approaches over a long period, including research-based WIL, through fundamental learning concepts such as socio-cultural, critical and action-oriented learning theories. These influences have shaped WIL at University West into a dynamic and academic area of knowledge and subject.

In order to achieve a strategic and qualitative development of work-integrated learning, the University West Board decided to WIL-certify all educational programs with a clear sustainability perspective. The quality process is called the WIL certification process. It has now been developed at the university for two years. Experience and refinements are ready to mature into an overall quality framework worth conceptualizing and disseminating to more universities that systematically want to develop WIL as an explicit quality dimension in higher education. The project is still ongoing but have generated some preliminary findings and outcomes from the initial phase. Data collection activities include workshops and focus groups with selected participants from the target groups at the university (managers/prefects and teachers) as well as at the collaborative partner organization (managers and supervisors/mentors). The focus of the workshops was placed on capturing the participants understanding and perspectives on WIL as a concept, and to map the conditions for and experiences of conducting WIL in teaching and learning at work. We aim for identifying good (or less good) examples of WIL, what they are, how they are understood and why they are (or are not) important.

The purpose of this paper is to describe the lessons learned so far and present a conceptual quality framework for WIL in higher education with a clear connection to sustainable development. The quality framework may function as a mediating "support object" between higher education institutions, industry partners, and actors in the surrounding society to promote WIL concepts and experiences in collaboration strategies

References

Barnett, R. (2000). University knowledge in an age of supercomplexity. *Higher education, 40*(4), 409-422.

Billett, S. (2014). Mimetic Learning in and for Work. In *Mimetic Learning at Work* (pp. 1-21): Springer. Islind,

A.S., Norström, L., Vallo Hult, H., Olsson, S.R. (2021). Socio-Technical Interplay in a Two-Sided

Market: The Case of Learning Platforms. In: Metallo, C., Ferrara, M., Lazazzara, A., Za, S.

(eds) *Digital Transformation and Human Behavior*. Lecture Notes in Information Systems and Organisation, vol 37. Springer, Cham. https://doi.org/10.1007/978-3-030-47539-0_4

Vallo Hult, H., & Byström, K. (2021). Challenges to Learning and Leading the Digital Workplace.

Studies in Continuing Education. DOI: 10.1080/0158037X.2021.1879038

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. Using discourse analysis to analyse the Work integrated learning policies at the Central university of Technology

Anri Wheeler

Background and aim:
Work Integrated learning forms and integral part of Universities of Technology in South Africa. A number of CUT programmes make provision for a work integrated learning component, either through work or community placements. WIL in its current form is essentially aimed at preparing students for a specific profession or vocation and to become responsible citizens (Van Schoor, & Erwee, 2009). There is an increasing focus globally that students should be developed holistically, and it is required from them to demonstrate certain life-skills, which will not only enhance their learning, but will also ensure that these skills are transferable to their working lives post-university (Van Schoor, & Erwee, 2009). In 2022, the broad unemployment rate for young people in South Africa was 63,9% for those aged 15-24 and 42,1% for those aged 25-34 years, (Stats SA, 2022). This is despite young people in the same age bracket becoming more educated as indicated with the increase enrolment and graduation rate at universities (Van Broekhuizen & Van der Berg, 2013). Therefore, an emphasis on work-integrated learning as part of University education is becoming more eminent as it can play a major role in ensuring that students acquire critical skills for employment as defined by NQF (National Qualifications Framework) (SAQA ,2007). How WIL speaks to employment in its implementation should be described in the WIL policy (Brown, 2010). Employability development should be embedded within the curriculum and be part of the culture of a university (Smith, Bell, Bennett & McAlpine, 2018). Employability in WIL should be understood as a process and not an outcome, with career development principles facilitating WIL (Smith et al, 2018). It is becoming clear in literature that both internal and external stakeholders should buy in to and understand the drivers of diverse views on employability development. The WIL policy at universities should thus be very clear on collaborations and relationships between academics, career professionals and industry to enhance employability (Smith et al, 2018).

Work integrated Learning is defined as an integrated learning process that allows opportunities to learn in context, to introduce students to workplace culture, assist in transition to work and to develop ability to reflect on practice (Van Broekhuizen & Van der Berg, 2013). From an industry point of view, WIL programs can enhance employability and contribute to the preparation of graduates that meet the demands of dynamic, complex professions (Brown, 2010). WIL has various components that starts with the preparation of students for the experiential learning environment, placing students in industry for work exposure and evaluating students' work readiness (Van Broekhuizen & Van der Berg, 2013; Lester & Costley, 2010). The process of WIL in the different faculties at CUT take on many forms but practical work-based experience is a common denominator implemented in all WIL programmes and is governed through a WIL policy.

The WIL Policy.

The word policy is directly linked to governance that is understood as rules, regulations, legislation and how order is maintained. The term policy is usually associated with a course of action (Bacchi, 2009). At the very heart of a policy is the desire to make a change which in turn implies that something needs to change. This implies that there is an initial problem that gave way to this policy (Bacchi, 2009). The WIL policy at a university should ideally answer: What is the current status of WIL in the university; What is understood as a successful WIL programs? What are the supporting resources required?; Any identified challenges? and How can universities move forward to address current challenges?(Brown, 2010). Research also indicates that there is an increasing need for university WIL policies to address quality work placements that speaks to industry needs (Brown, 2010). WIL policies should also promote a research initiative (Brown, 2010). Learning standards should be defined that describe what students should know or be able to do (Bloxham et al, 2011). The aim in WIL policies are moving towards gradually transitioning towards discourses of quality assurance (Vidovich, 2001). The WIL policy at a university should allow for scrutiny of the assessment of students by other interested parties and rather remove narrow performance indicators that aren't flexible to industry needs (Yorke & Vidovich, 2014). It is argued that staff, students and industry should co-construct institutional policy and practice through sharing of resources and the successes and challenges WIL (Yorke & Vidovich, 2014; Brown, 2010). The WIL policy should be sensitive to the tensions around differing expectations of industry and university, 'managing expectations of work readiness' and the 'gap between competencies and industry requirements (Brown, 2010).

The CUT Work integrated learning policy should have at its core the ideal to address this challenge of employability by resourcing students with all the tools necessary to survive in the working environment by applying academic theory in practice. This need as also addressed in literature (Yorke & Vidovich, 2014; Brown, 2010; Smith et al, 2018) gave way to this article that aims to analyze the WIL policy documentation at CUT in light of the employability problem in South Africa.

Discourse analysis It is important with every policy to understand what the problem is and what is the rational behind wanting to address this problem. Problems are thus endogenous to policies and not exogenous as the policy gives shape to the problem but do not address them. When examining policies like I aim to do I will thus have to think critically about the endogenous problems that are intwined in this policy (Bacchi, 2009). is an established field of analysis that describes how knowledge is formed in the interaction of plural and contingent practices within different sites, each of which involves the material and the symbolic (Foucalt, 1972). The term discourse refers to knowledge, specifically inherent knowledge that is imbedded within the contextual truth rather than just to language.

Evaluating policies in the form of discourses can assist in getting a clear understanding of the essence of the policy and also assist with getting community buy in. Discourses are practices that systematically form the objects of which they speak (Deleuze & Foucault, 1977). The discourses of policy writing should just always be taken into consideration because otherwise we concentrate too much on what those who reside in policy think about and misses and fails to attend to what they do not think about (Ball, 1993). Thus we need to appreciate the way in which policy outfits, sets of related policies and exercise power through a production of reality as discourse. Discourses are about what is said and thought, but also about who can speak, when, where and with what authority. Discourses embody the meaning and use of propositions and words. Thus, certain possibilities for thought are constructed. Words are ordered and combined in particular ways and other combinations are displaced or excluded. Discourses get things done, accomplish real tasks, gather authority (Ball, 1993).

Thus discourses analysis provides a valuable tool in the investigation into CUT's policy on WIL in order to understand the power relations at play, how changes in policy will affect the intricate relationships and what ontological and epistemological assumptions underline the reasoning behind the policy.

Methodology:

The WIL Policy documentation was evaluated by using the Bacchi Discourse policy analysis method. Robert Pereir (2014) suggests that Bacchi's (2009) policy analysis methodology is a tool that can be applied to ontologically and epistemologically expand the research potential of evaluating policies to explore macro influences on identifying a problem and the effects of the policy. For the purpose of this article Bacchi's approach in policy analysis was used as analysis method. The Bacchi approach does not measure the effectiveness of a policy. It enables researchers to consider how policies produce particular 'truths' about the world and the 'problems' that exist. A policy and the way it is written by policy-writers shapes what we understand to be the problem. The first step is thus the problem representation. The four policy documents that are described above refer to the function, implementation, scope and maintenance of WIL at CUT.

Results. In the WIL policy documents four main role players are implicitly described and also their respective roles in the WIL process they are the CUT referring to the academic departments and faculties, The WIL office at CUT, The employers or industry partners and the students. Question two of the Bacchi method follows the identification of the problem representations for each of the policy documents. In this step it was considered how it is possible for such proposals to be made about the four role players, what meanings and 'deep conceptual premises' needed to be in place for such proposals to emerge, and what this could reveal about inherent power relations. How the WIL documents define and work with the four stakeholders were examined below.

CUT academic departments and faculties.

The effect produced with this narrative is that a lot of the responsibility of ensuring effective WIL placements fall on the shoulders of the faculties without a lot of guidance or prescriptions except for the extent of placement. The guidelines speak of placements and monitoring but not on what the monitoring is based. The industry voice is silent in the placements discourse in the policy documents.

Employers and industry partners.

The effect that is aimed to be produced with the WIL policy includes: that WIL provides a mechanism to approach and forge strategic partnerships with commerce, industry and the public sector to further enhance the relevance of qualifications as well as the employability of students. This is set out as a goal of WIL in the policy document but it's not enforced in the document with certain performance goals or outcomes. Employment is seen as a priority but no further mention of enhancing employability specifically is mentioned.

Students

Students' responsibilities are set out as administrative and behavioral. They should ensure they are registered and to conduct themselves professionally during placements

WIL-Office

The Problem that supersedes the need and function of the WIL office discourse in the documentation is the need to facilitate and manage the WIL processes at CUT. The WIL-office perform a liaising function between employers and the university and assist in finding suitable placements for the students. What is left unproblematic is that there is no indication of how suitability of employers is established and how the WIL office communicates the need of industry with faculties. The silences are seen in this documentation between the stakeholders to ensure that quality

WIL takes place. How the communication takes place and to what end does communication take place is left unsaid.

Conclusion

Although all the necessary role-players are indicated in the WIL policy documentation there are main problems and challenged that are not addressed. The relationship and responsibilities of the Employers and students in regards to their training and gaining of skills are silent in the documentation and leaves room to free interpretation which can have an impact on the quality of the WIL experience especially relating to their later employability and being absorbed into the world of work. The role of industry and students in the development of the WIL policy is not clearly understood in the discourse and there seems to be minimal room for flexible assessment on the side of industry.

References:

Bacchi, C. (2009). Analysing policy. Pearson Higher Education AU.

Ball, S. J. (1993). What is policy? Texts, trajectories and toolboxes. The Australian Journal of Education Studies, 13(2), 10-17.

Bloxham, S. (2009). Marking and moderation in the UK: False assumptions and wasted resources. Assessment & Evaluation in Higher Education, 34(2), 209-220. doi: 10.1080/02602930801955978

Boud, D., & Associates. (2010). Assessment 2020: Seven propositions for assessment reform in higher education. Retrieved from http://www.olt.gov.au/system/files/resources/Assessment%202020_final.pdf

Brown, N. (2010). WIL [ling] to share: an institutional conversation to guide policy and practice in work-integrated learning. Higher Education Research & Development, 29(5), 507-518.

Cooper, L., Orrell, J., & Bowden, M. (2010). Work integrated learning: A guide to effective practice. New York, NY: Routledge

Deleuze, G., & Foucault, M. (1977). Intellectuals and power. Language, counter-memory, practice, 205-17.

Foucault, M. (1972). The archaeology of knowledge: Translated from the french by AM Sheridan Smith. Pantheon Books.

Lester, S., & Costley, C. (2010). Work-based learning at higher education level : value , practice and critique. Studies in Higher Education,35 (5), 1–17.

Robert J. C. Young, Untying the text: a post-structuralist reader (Boston: Routledge and Kegan Paul, 1987), 48

SAQA (South African Qualifications Authority) .2007. (http://www.saqa.org.za/show.asp?main=docs/brochures/nqf-brochure.html&menu=ho...)Retrieved on 23/05/2007.

Smith, M., Bell, K., Bennett, D., & McAlpine, A. (2018). Employability in a global context: Evolving policy and practice in employability, work integrated learning, and career development learning

Van Broekhuizen, H., & Van Der Berg, S. (2016). How high is graduate unemployment in South Africa? A much-needed update. Econ 3, 3.

Van Schoor, J. H., & Erwee, C. C. (2009). The implementation of work-integrated learning in the Marketing programme at the Central Univeristy of Technology, Free State, Free State. Interim: Interdisciplinary Journal, 8(1), 83-95.

Vidovich, L. (2001). That chameleon 'quality': The multiple and contradictory discourses of 'quality' policy in Australian higher education. Discourse, 22(2), 249-261.

Yorke, J. O. N., & Vidovich, L. (2014). Quality Policy and the Role of Assessment in Work-Integrated Learning. Asia-Pacific Journal of Cooperative Education, 15(3), 225-239.

Challenges of Engineering Education 5.0 based on I4.0 Policies in Brazil, India, Japan, and Sweden

Jorge Muniz Jr*. *(Sao Paulo State University, UNESP, Brazil) - jorge.muniz@unesp.br*

Fernando A. S. Marins *(UNESP, Brazil) - fernando.marins@unesp.br*

Kristina M. Eriksson *(University West, Sweden) - kristina.eriksson@hv.se*

Herman J. C. Voorwald *(UNESP, Brazil) - h.voorwald@unesp.br*

Marta Ligia Pomim Valentim *(UNESP, Brazil) - marta.valentim@unesp.br*

Mikael Ericson *(University West, Sweden) - mikael.ericsson@hv.se*

Sudha Ramasamy *(University West, Sweden) - sudha.ramasamy@hv.se*

Yufeng Zhang *(University of Birmingham, UK) - Y.Zhang.6@bham.ac.uk*

Yagi Shotaro *(University of Tokyo, Japan) - yagi-shotaro@g.ecc.u-tokyo.ac.jp*

*Corresponding author

Introduction

Industry and academia have placed increasing attention on implementing Industry 4.0 (I4.0) in the production of goods and services. Named as Industry 4.0 in Brazil, Made in India in India, Society 5.0 in Japan, and Produktion2030 in Sweden (Ribeiro et al., 2022). Hereafter, we apply I4.0 to simplify, which promises customized products produced in smaller lots, and that repetitive manufacturing tasks can be automated very soon (Karre et al., 2017).

Country policies play an important role in pushing different sectors of the economy, aligned as new with the regulatory framework of national and international trade, especially industrial (Aguinis et al., 2020). The implementation of I4.0 literature indicates different specificities in each country, including culture, R&D targets, education and vocational training, and their research opportunities related to how I4.0 affects workers (Jerman et al., 2020). The research-question is: How do different countries approach the opportunities and challenges of Engineering Education 4.0 through similar or different country policies?

This study aims to discuss engineering education related to I4.0 policies. This discussion is based on policies from Brazil, India, Japan, and Sweden related to education and workers 5.0, which include students and employees.

Investigating how these countries are adjusting to I4.0 is relevant for national industrial sectors to wish to act efficiently in this new technological context. Industry 4.0 demands new professional skills and will impact employment. It is noteworthy that this research is in line with the Sustainable Development Goals (SDGs) proposed by the United Nations (UN): Quality Education (SDG-4); o Decent Work and Economic Growth (SDG-8); and Industry, Innovation, and Infrastructure (ODS-9) which seeks to promote inclusive and sustainable industrialization and foster innovation. This research aims to contribute to sustainable organizational practices; formulation of public policies that alleviate social problems; guidance of professional curricula affected by I 4.0.

Papers and Data Selection

A literature search was conducted in the Scopus database, which gathers some of the most important journals related to manufacturing technologies with high impact factors, based on the PRISMA method, which refers to a minimum set of evidence-based items to report studies in systematic reviews and meta-analyses (MOHER et al., 2009). The paper set was assembled from the Scopus core collection, using the following search string: "industry 4.0" OR "industry 5.0" AND "policies" AND ". The results were narrowed to texts in English, which yielded 14

papers. All titles and abstracts were read, which resulted in a set composed of 14 papers. We also use official documents relating to I4.0 raised from official government websites.

Comparison of Countries' Education policies and Industry 4.0
The literature addresses difficulties associated with the implementation of I4.0 in emerging economies (Dalagnore, 2018; Hong and Muniz Jr., 2022). Not surprisingly, current literature I4.0 related to technology adoption is the most prevalent theme discussed from a hard, technology-oriented perspective rather than a people-oriented. Production systems are sociotechnical systems, with an explicit understanding that all systems involve ongoing interactions between people and technology, and they are rapidly transforming virtually all areas of human life, work, and interaction.

The European Commission's (Breque et al., 2021) vision for 'Industry 5.0' proposes moves past a narrow and traditional focus on technology-or economic enabled growth of the existing extractive, production and consumption driven economic model to a more transformative view of growth that is focused on human progress and well-being based on reducing and shifting consumption to new forms of sustainable, circular and regenerative economic value creation and equitable prosperity. This Human-centric production system design and management approach (Industry 5.0) is necessary to support skill development, learning, continuous improvement and collaboration in the organization (Ribeiro et al., 2022).

Conclusion
Brazil, India, Japan and Sweden create policies to support their own technological independence. All countries indicate concern about education and development of skills related to I4.0.
It can be concluded that the four countries studied from the perspective of Industry 4.0 and Engineering Education 4.0 are all embarking on their journeys towards increased digitalization in industry and society as a whole. The realization of the human-centered Society 5.0 was realized and highlighted comparatively early for Japan, whereas in the Europe Union and thus in Sweden the focus of the importance of Industry 5.0 development in parallel Industry 4.0 has risen up since year 2021.
The results indicate that although there are many initiatives of meeting the needs for new competence and knowledge in the era of I4.0 to accommodate Engineering Education 4.0 there are still challenges for future research to move forward in the nexus between I4.0 and I5.0. The result, of studying different countries' policies, highlights that it is imperative, when approaching novel technologies in I4.0 and designing Engineering Education 4.0, to in parallel consider technological implementations with the inclusion of I5.0 aspects and human-centric perspectives.

A Work-Integrated intervention in health and social care –

Professionals´ experiences of joint education

Anh Thuc Truong*, *Department of Health Science, University West, Trollhattan, Sweden,* anh. truong@ hv. se

Thomas Winman, *Department of Economy and IT, University West, Trollhattan, Sweden*

Anette Ekström-Bergström, *Department of Health Science, University West, Trollhattan, Sweden; Research Group Family Centerd, Health (FamCeH), University of Skövde, Skövde, Sweden*

Catrin Johansson, *Department of Health Science, University West, Trollhattan, Sweden*

Corresponding author

Abstract

Introduction: Worldwide, educational interventions are carried out continuously as an ongoing activity linked to competence provision and development of the organization. In follow-up and evaluation of the interventions, the result, i.e., the effect of the intervention, has usually been the main concern whereas the mechanism behind the operation of the intervention is often obscured. The aim of this evaluation study is to contribute knowledge to the field of intervention research regarding aspects that should be considered in designing a learning-supportive educational intervention. Such knowledge would increase the likelihood that experiences generated from the intervention are implemented in the daily undertaking.
Accordingly, knowledge within intervention research increased significantly since the field expanded rapidly in the past decade. However, critical voices have been raised regarding aspects that are often overlooked in the field and highlighted the tendency that intervention studies frequently focus on the methods used to test the intervention whereas the rigor of intervention development and design has not received the attention it deserves. When it comes to educational intervention, concerning the aforementioned viewpoint, the process of learning cannot be left out. Studying learning processes and studies in designing education to support learners´ learning process is one of the main areas of interests in Work-Integrated Learning (WIL), particularly in the matter of learning in relation to working life, where the goal is to help the learners to integrate knowledge from education into practice. From the perspective of WIL, the social dimension has a certain influential effect on learning, which should be taken into account. A key word in this dimension is interaction.
Nationally and internationally, within health care, recurring training, intraprofessional and/or interprofessional is given aiming to improve professionals' knowledge, attitudes, confidence levels and practices in care, in addition, to enhancing the collaboration to safeguard the patient safety and the quality-of-care. In Sweden, one area that has been debated and discussed regarding competence and knowledge scarcity among professionals and urged for measures to support competence provision, is health and social care for people with intellectual disabilities. In this context, the knowledge that can be applied in development and design of effective educational intervention appears to be almost zero. We are in the opinion that this knowledge gap should be a matter of concern and an area that needs to be explored.

Methods: Data was gathered by way of semi structured interviews. Qualitative inductive analysis was applied using qualitative content analysis of Graneheim and Lundman.
Totally, 24 individual interviews were conducted with the participating professionals.
With guidance of the checklist COREQ, our ambition is to make the research process in this study as transparent as possible which further increases the replicability.

Results: By exploring participants' experiences of the different components in an intervention with regard to their learning and knowledge development, both individual and of the group, in relation to their profession, finding answers to *"what works"* and *"how it works"*. Thereby gaining understanding and knowledge that can be applied in the design of future interventions and consequently, fill the existing knowledge gap.

Ethics: Approval was obtained from the Swedish Ethical Review Authority, Dnr 35 517 for the project as whole. In addition, a supplemental application to phase two has made and is approved, on September 21, 2021, Dnr 2021-0460.

References

Aranda, S. (2008). Designing nursing interventions. Collegian, 15(1), 19-25. https://doi.org/https://doi.org/10.1016/j.colegn.2007.11.002

Björck, V. (2020). Learning 'theory' at university and 'practice' in the workplace : A problematisation of the theory-practice terminology that the dualistic design of Work-integrated Learning institutionalises [Doctoral thesis, comprehensive summary, University West]. DiVA. Trollhättan. http://urn.kb.se/resolve?urn=urn:nbn:se:hv:diva-16063

Dahlborg, E. (2010). Praxis i vårdvetenskap. In S. Lagrosen, U. Lundh Snis, & E. Nehls (Eds.), Lärande i och för det nya arbetslivet (pp. 139-154). Studentlitteratur.

Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. Nurse Education Today, 24(2), 105-112. https://doi.org/https://doi.org/10.1016/j.nedt.2003.10.001

Skivington, K., Matthews, L., Simpson, S. A., Craig, P., Baird, J., Blazeby, J. M., Boyd, K. A., Craig, N., French, D. P., & McIntosh, E. (2021). Framework for the development and evaluation of complex interventions: gap analysis, workshop and consultation-informed update. https://doi.org/10.3310/hta25570

Swedish National Board of Health and Welfare. (2020). Insatser och stöd till personer med funktionsnedsättning, lägesrapport 2020. https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/ovrigt/2020-3-6686.pdf

Swedish National Board of Health and Welfare. (2021). Kompetens i LSS boende. https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/ovrigt/2021-3-7312.pdf

Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International Journal for Quality in Health Care, 19(6), 349-357. https://doi.org/10.1093/intqhc/mzm042

Being and becoming critical friends as a sustainable support function in academic work

Folkman, A.K*, *Faculty of Social Sciences at the University of Stavanger, Stavanger, Norway,* *anne.k.folkman@uis.no*

Areskoug Josefsson, K. *Department of Health Sciences, University West, Sweden; [3] Department of Behavioral Science, Oslo Metropolitan University, Norway; [4] Jönköping Academy for Improvement of Health and Welfare, Jönköping University, Sweden*

*Corresponding author

Abstract

As we strive to teach our students to think critically about health and well-being in professional work, based on cooperation, life-long learning, and sustainability in working life, we need to meet the challenge of applying strategies to achieve this in academia as well. Stolle et al. (2018) underline the need to better understand CF as a research tool, to improve ourselves as self-study researchers versus teacher educators. We need to collaborate, to establish safe ways of working and negotiate shared understandings to develop and growth in professional academic achievement. Addressing sustainability challenges is most effective when coproduced by academics and non-academics in a way that provides solutions and contributions to the related scientific body of knowledge (Schneider et al., 2021).

This presentation explores CF as a sustainable support function based on our experiences in a co-produced research project in a Norwegian municipality. The research question is: *What characterizes CF as a sustainable support function in a follow-up research project in a Norwegian municipality?*

The case

The municipality has an ongoing innovation project "The team around the teacher and the pupil (2019–2023)". This project has a public health- and preventive perspective based on experienced challenges in the local school setting. The focus of the project is to strengthen the pupils' learning environment and learning outcomes, by involving the reorganization of interdisciplinary and interprofessional resources to promote coping, belonging and good mental health in all the primary and secondary schools in the municipality (Folkman et al., 2020). The research group was interdisciplinary and worked in close collaboration with the municipality´s project leaders. The project also included master students' projects. The engagement of master students in a co-produced research project provides the students with work-integrated learning experience of research with practice.

Theory

Co-production of knowledge must explicitly recognize multiple ways of knowing and doing (Schneider et al., 2021). CF involves trusting relationships, productive tensions, and two-way learning as mechanism (Knowles et al., 2018; Stolle et al., 2018). The connection between reflection and CF (Stolle et. al, 2018), aligns with core participatory mechanisms that enable 'dialogue and iteration' and authentic involvement (Knowles et al., 2018; Norén & Wallin, 2018). Conflicting agendas require that parts reflect on the principles of respect and solidarity to ensure a broader collective goal and that each agenda can be met while maintaining the integrity of the overarching goal of the research (Page, 2022). Reflection is a meaning-making process highlighting relationships (Stolle et al., 2018).

Method and analysis

The research question led to an integrated analytic process (Strøm & Fagermoen, 2012), based on the project documents, reports, and articles from the project. The deductive analysis involved the interpretation of the data to explore characteristics of CF as sustainable support in work integrated learning. Two themes emerged through the analysis process: CF and knowledge production in the project and CF: mandate and role.

Results

CF and knowledge production in the project

There was a period of initial negotiations between the project leader and the research group, as the project leader wanted to develop a research design suitable to support the objectives and aims of the project. Therefore, work as critical friends, started by critical questions from the research group about the operationalization of research objectives in the project and the pre-planned measures of intended results. There were negotiations of understanding in the processes of developing a contract and research plan and considering knowledge from both parties. This time-consuming process was ongoing through the follow-up research, as new perspectives and results

emerged. However, this also led to a closer collaboration with more school staff and leaders in the municipality, which was beneficial for understanding the results from the project.

CF: mandate and role

Co-production in the research process took place in a field of tension, where the project leaders and the researchers acted as critical friends to each other. The underlying tension, based on the project leader`s mandate, role and knowledge of the context, and the research groups roles and competence in research methodology, proved to enhance the learning for both parties and encompassed continuous need for dialogue. However, through CF the research of the project was also used to inform and improve the project, and then provide additional collaborative research topics. The controverses advanced a dynamic co-creative learning process, linked to knowledge of practice-based evaluation research in this context, but also a nearer friendship that obliged.

Discussion

Our results show, that that CF in co-production between practice and research can contribute to promoting the legitimacy of the research contribution in the field of practice the project deals with, supported by Schneider et al., (2021). For researchers' objectivity and integrity in the research process is essential, but this can be experienced as conflicting with project leaders' views and need for measurable outcomes. Reflecting rooted in a scientific inquiry, can serve as generating new meaning and learning opportunity for both parties (Stolle et al., 2018). The results underpin the importance of understanding one's language and respecting each other's knowledge when co-producing together with academia and practice (Schneider et al., 2021). To push our thinking and learning asking critical questions, can be limited by being "best friends" (Stolle et al., 2018), thus having different views are an asset. Agreement must be reached about different roles, responsibilities and knowledge, and how the objectives of each stakeholder can be achieved (Page, 2022). The participating students could have been even more involved in the CF dialogues. They were invited to result presentation meetings, but work-integrated learning would have been enhanced if they had been able to participate on more equal terms.

Conclusion

This paper presents joint learning from a mainly online CF experience, formed by mutual respect and leading to increased learning and increased value of research outcomes. The value of research collaboration and support with CF is increased. This is important in academia and for a sustainable work situation for researchers. The project also provided work-integrated learning for students, but this could have been further enhanced.

References

Folkman, A. K., Areskoug Josefsson, K., & Fjetland, K. J. 2022. Norwegian Teachers' Experiences with Distance Teaching and Online Schooling During the COVID-19 Pandemic. Scandinavian Journal of Educational Research, 1(16), 1-16. https://doi.org/http://dx.doi.orghttps://doi.org/10.1080/00313831.2021.2021445

Knowles, Allen, D., Donnelly, A., Flynn, J., Gallacher, K., Lewis, A., McCorkle, G., Mistry, M., Walkington, P., & Drinkwater, J. 2021. More than a method: trusting relationships, productive tensions, and two-way learning as mechanisms of authentic co-production. Research Involvement and Engagement, 7 (34). https://doi.org/10.1186/s40900-021-00262-5

Norén, K, Wallin, M. 2022. Akademisk chef : hur fungerar det? Studentlitteratur

Page, K. 2022. Ethics and the co-production of knowledge. Public Health Res Pract, 32(2). https://doi.org/10.17061/phrp3222213

Petroelje Stolle, Frambaugh-Kritzer, C., Freese, A., & Persson, A. (2018). What makes a critical friend? Castle Conference,East Sussex, United Kingdom,2018-07-15 - 2018-07-19, 147.

Schneider, Tribaldos, T., Adler, C., Biggs, R., de Bremond, A., Buser, T., Krug, C., Loutre, M.-F., Moore, S., Norström, A. V., Paulavets, K., Urbach, D., Spehn, E., Wülser, G., & Zondervan, R. 2021. Co-production of knowledge and sustainability transformations: a strategic compass for global research networks. Current Opinion in Environmental Sustainability, 49, 127–142. https://doi.org/10.1016/j.cosust.2021.04.007

Strøm, A. & Fagermoen, M. S. 2012. Systematic Data Integration—A Method for Combined Analyses of Field Notes and Interview Texts. International Journal of Qualitative Methods, 11(5), 534-546. https://doi.org/10.1177/160940691201100502

Collaborative Learning in Digital Spaces

Ammar Singh, Østfold University College,

Ammar.b.singh@hiof.no

Introduction

Massive open online courses (MOOCs) have created an alternative learning environment, which is rich in learning resources, inclusive in terms of participation, and innovative in terms of approaches to learning (self-directed versus collective). The alternative environment has promoted exchanges of ideas and collaboration among remotely located participants, fostering their co-development (Fischer, 2016). We call this alternative learning environment "the space for reasoning and co-development" as remotely located participants share their rich practice-related knowledge with other participants to develop and advance systematic or scientific understanding of learning tasks or problems. Research studies indicate that digital technologies (e.g., Teams, PowerPoint slides, etc.) can afford a range of collective learning activities (Jeong & Hmelo-Silver, 2016; Pinto & Leite, 2020)

Because of their potential to offer education for several hundreds of students, promote their self-directed learning capability, and enhance their professional digital competence, MOOCs have been increasingly adopted by higher education institutions. MOOCs development has taken the formal approach, especially in the Norwegian context, where universities receive government grants to recreate MOOCs to develop teachers' professional digital competence(Tømte Cathrine et al., 2020). We call these types of MOOCs "institutional MOOCs," which are different from the conventional MOOCs (i.e., the MOOCs offered by big platforms such as Coursera, FutureLeam, and edX) in terms of teacher and student engagement in teaching and learning activities. Teachers engage mainly with students through course discussion forums (Facebook and Canvas) and online live meeting sessions. Technologies now enable both synchronous (e.g., live meetings and chats through Teams, Zooms, etc.) and asynchronous (course discussions forums) modes of communication and interaction. Discussion forums remain the primary spaces and tools for communication and interaction between teachers and students and between students and students. Empirical studies suggest that course discussion forums promote peer interaction and collaboration, promoting shared meaning-making and knowledge development (Margaryan et al., 2015; Zou et al., 2021). However, online live learning sessions in the context of MOOCs remain underexplored. I argue that developing and advancing systematic or logical understanding requires a joint engagement of participants in learning, where participants can present and explain ideas and make epistemic claims, which are critically questioned and assessed by fellow participants. Such a dialectical process of joint learning demands students enact their agency in learning. This study examines how students engage in collaborative learning practices, enacting as well as well developing their agency.

Furthermore, our learning is mediated by both human and non-human tools. Obviously, students, teachers, or knowledgeable others are human mediators. Technologies such as Teams, OneNote, and PowerPoint slides can mediate our learning as we can explicitly present our abstract ideas using these tools, and fellow participants have developed a better sense of what is being discussed. This study also examines how technologies support students' agency in learning.

This study focuses on an institutional MOOC a Norwegian university college has offered since 2016 to develop teachers' professional digital competence. It examines how students learn collaboratively in online learning sessions (e.g., Teams meetings) and how digital technologies (any digital resources they share during discussion) support their collective learning efforts.

Research Questions:

How do students learn collaboratively in online learning sessions?
How do digital technologies support students' collaborative learning processes?

Theoretical Framework

This study is guided by Vygotsky's cultural-historical theory, which emphasizes the role of interaction, collaboration, and mediation in teaching and learning (Vygotsky, 2012). Our understanding of learning tasks or problems evolves and expands in and through collaborative practices, and each individual gets an opportunity to contribute to developing joint activities in his own uniquely individual ways (Stetsenko, 2017). Stetsenko argues that collaborative practices:

…constitute the primary relations connecting individuals to their world and give rise to psychological processes (cognition, self, self-regulation, and emotion), with individuals acting as agents involved in collaborative practices that issue in psychological processes and knowledge construction (p. 159).

We argue that collaborative learning activities create a zone of proximal development (ZPD), which is conceptualized as a socio-pedagogical space of teaching and learning (Kostogriz & Veresov, 2021). In that socio-pedagogical space, learners are connected to a holistic learning process, use a range of material or semiotic tools, and engage in intersubjective meaning-making processes (Kostogriz & Veresov, 2021; Stahl, 2021). Online collaborative meetings can be considered socio-pedagogical spaces for developing and advancing learning or scientific reasoning. Knowledge is not something to be discovered and acquired; it is something that evolves when we enact learning and reenact in problem-solving activities (Arievitch, 2017). Learning and developing knowledge become more reflectively organic when we engage together in the process of advancing scientific perspective of how to solve learning tasks.

Galperin (1969), who expanded the pedagogical aspect of Vygotsky's cultural-historical theory, devised a pedagogical theory outlining a systematic approach to mental development. According to Engeness (2021), Galperin has outlined six pedagogical activities for transferring and transforming external action into internal/mental action. These are (i) motivation, (ii) orientation: how to go about learning, (iii) materialized actions: sharing a concrete task, (iv) communicated thinking: discussing the task, (v) dialogical thinking: structuring target concepts, and (vi) acting mentally: engaging in self-talk. These dialectically evolving pedagogical stages explain how the transformation of an external action into internal/mental action happens. We use Galperin's theory as an analytical framework to examine students' learning processes in online video meetings.

Participants, Data, and Methods

In-service and pre-service teachers who took the institutional MOOC in 2021 were the participants of the study. Of the 297 students who registered for the course examination, 23 students gave their contest to film their online meetings and use them for this research. One video recording (01:02:06 hours) was selected for interaction analysis, where four students participated in collaborative learning. The rationale behind choosing this meeting was that students' joint learning processes and use of technologies was more explicit.

The recording was transcribed in Norwegian using Jefferson's transcription notation (Jefferson, 2004) and translated into English by a research team. We observed how students initiated their meetings, framed rules of engagement, enacted them while engaging in discussion, and concluded their learning. The students were engaged in understanding how to solve the mandatory individual examination assignment in online meetings.

The interaction analysis was conducted in three steps (Linell, 1998): first, the interaction sequences were described by referring to the numbered lines; second, interactions were analyzed from the perspective of the research questions; and third, the emergent findings were outlined. Finally, after completing the interaction analysis, the extracts were examined via the analytical lens offered by Galperin's pedagogical phases. In this way, we examined students' collaborative epistemic activities to develop a nuanced understanding of their examination assignment task (e.g., creating a flipped classroom

Findings

The findings revealed that students engaged in four main epistemic activities: (a) co-reflection (reflecting on professional and personal experience), (b) co-orientation (epistemic positioning and planning rules of engagement), (c) presentation (sharing ideas explicitly), (d) assessment (questioning, clarifying, and feedback giving), and (e) reflection (concluding and outlining further actions). These collaborative epistemic activities evolved when the students presented, explained, claimed, and vetted their epistemic claims related to creating the examination assignment in the online collaborative learning meetings. Online interactive sessions can develop the relational zone of belonging, and foster students' emotional, cognitive, or intellectual becoming, enhancing their agency in online learning.

Digital technologies or resources such as the OneNote document that was shared on the screen motivated students to know the ideas presented, gradually drawing them into active learning processes. The students who were unprepared or had little prior knowledge about how to solve the examination assignment learned to develop a conceptual understanding of the examination assignment with the support of digital resources in interaction and collaboration. Thus, we claim that digital resources can become crucial tools to present ideas, make sense of the presented ideas, and motivate students to enact and develop their agency in learning. Agency, as the capacity to know how to engage in learning processes to develop and advance conceptual understanding comes into play, is realized, and is expanded when students are engaged in a collaborative learning process.

Thus, online collaborative learning meetings can become new spaces of formal and informal learning in the sense that they can bring their own practical experiences and academic knowledge to discuss how to solve their learning problems. Digital synchronous learning spaces can turn into spaces for learning and co-development in digital learning environments.

If we want to develop students' co-agency in learning (Glăveanu, 2015), then we have immense technological possibilities for engaging students in joint learning processes in their own spaces (Teams, Zoom) and with their own tools (labtops, cell phones, tablets), where they can present ideas, contest ideas and develop under understanding and knowledge. Such organic processes of learning together foster humanization and

conscientization(Melling & Pilkington, 2018), but unfortunately the focus seems to be given on engaging teachbots to drive students' online learning activities in discussion forums, which are traced and measured learning analytical tools. Metrics can figure out behavioral patterns, but not joint processes of reasoning, judgement and critical thinking. Education is about creating spaces of reasoning and online meeting session have immense potential for that.

References

Arievitch, I. M. (2017). *Beyond the brain: An agentive activity perspective on mind, development, and learning*. Springer International Publishing.

Engeness, I. (2021). *PY Galperin's development of human mental activity: Lectures in educational psychology*. Springer.

Fischer, G. (2016). Exploring, Understanding, and Designing Innovative Socio-Technical Environments for Fostering and Supporting Mass Collaboration. In U. Cress, J. Moskaliuk, & H. Jeong (Eds.), *Mass Collaboration and Education* (pp. 43-63). Springer International Publishing. https://doi.org/10.1007/978-3-319-13536-6_3

Galperin, P. (1969). Stages in the development of mental acts. A handbook of contemporary soviet psychology. . In M. Cole & I. Maltzman (Eds.), *A handbook of contemporary soviet psychology* (pp. 249-273). Basic Books.

Glăveanu, V. P. (2015). From individual agency to co-agency. In C. W. Gruber, M. G. Clark, S. H. Klempe, & J. Valsiner (Eds.), *Constraints of agency: Explorations of theory in everyday life* (pp. 245-265). Springer International Publishing. https://doi.org/10.1007/978-3-319-10130-9_15

Jefferson, G. (2004). Glossary of transcript symbols with an introduction. In G. H. Lerner (Ed.), *Conversation analysis: Studies from the first generation* (pp. 13-31). John Benjamins Publishing https://doi.org/10.1075/pbns.125.02jef

Jeong, H., & Hmelo-Silver, C. E. (2016). Seven affordances of computer-supported collaborative learning: How to support collaborative learning? How can technologies help? *Educational psychologist*, *51*(2), 247-265. https://doi.org/10.1080/00461520.2016.1158654

Kostogriz, A., & Veresov, N. (2021). The zone of proximal development and diversity. In: Oxford University Press.

Margaryan, A., Bianco, M., & Littlejohn, A. (2015). Instructional quality of Massive Open Online Courses (MOOCs). *Computers & Education*, *80*, 77-83. https://doi.org/https://doi.org/10.1016/j.compedu.2014.08.005

Melling, A., & Pilkington, R. (2018). *Paulo Freire and Transformative Education : Changing Lives and Transforming Communities* (1st 2018. ed.). Palgrave Macmillan UK : Imprint: Palgrave Macmillan.

Pinto, M., & Leite, C. (2020). Digital technologies in support of students learning in higher education: Literature review. *Digital Education Review*(37), 343-360. https://doi.org/10.1344/DER.2020.37.343-360

Stahl, G. (2021). *Theoretical Investigations: Philosophical Foundations of Group Cognition* (Vol. 18). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-49157-4

Stetsenko, A. (2017). *The transformative mind: Expanding Vygotsky's approach to development and education*. Cambridge University Press.

Tømte Cathrine, E., Laterza, V., Pinheiro Rómulo, M., & Avramovic, A. (2020). Is there a Scandinavian model for MOOCs? *Nordic Journal of Digital Literacy*, *15*(4), 234-245. https://doi.org/10.18261/issn.1891-943x-2020-04-02

Vygotsky, L. S. (2012). *Thought and language* (2nd ed.). MIT Press.

Zou, W., Hu, X., Pan, Z., Li, C., Cai, Y., & Liu, M. (2021). Exploring the relationship between social presence and learners' prestige in MOOC discussion forums using automated content analysis and social network analysis. *Computers in Human Behavior*, *115*, 106582. https://doi.org/https://doi.org/10.1016/j.chb.2020.106582

Digitalization of integration support in Sweden – practices and consequences

Linda Bradley*, *Department of Education, Communication and Learning, University of Gothenburg,* linda.bradley@gu.se

Andreas Diedrich, *Department of Business Administration, University of Gothenburg,* andreas.diedrich@gri.gu.se

*Corresponding author

Keywords: recent immigrant, digitalization, digital tool, labour market integration, migration, design

Extended abstract
This research explores the efforts to design a digital tool for supporting the labour market integration of immigrants in Sweden. Specifically, it highlights the challenges emerging in a "bottom up design process" where emphasis is put on involvement of the immigrants in the design process. The increasing focus on digitalization in countries of the Global North due to austerity and efficiency criteria (Dunleavy & Margetts, 2010) has given rise to new ideas about the requirements for responsible citizenship and job skills as well as the public services that are offered to facilitate these – especially in welfare states. Among other things, this has resulted in the emergence of new practices of supporting the integration of recent immigrants into the labour market, such as new digital administration and reporting procedures, new online language courses and other training courses, and a shift from face-to-face interactions involving public officials and immigrants to digitally-mediated interactions.

Research has pointed to an increased interest in the role and use of digital technology in immigrants' integration processes (Alencar and Tsagkroni 2019; Gillespie et al. 2018) and how digitalization impacts the integration support services provided for immigrants upon arrival in the new country (see e.g. Besic et al., 2022). In this latter respect, Aaltonen (2019) exploring the case of Finland, suggested that several kinds of resources influence the quantity and quality of information and communication technology use among immigrants as they try to get a foothold in the new country, such as income, employment and education, gender, ethnicity, generation, social ties, and lifestyle. Yet other studies have explored how immigrants learn in, and about the practices of, the workplace, the new language and how such learning can be supported by digital tools (Bradley et al., 2020; Leurs & Smets 2018). Critical scholars have argued that while digital tools are often presented as a cure-all solution, their increasing use contributes to further marginalizing already marginalized groups (Trittin et al., 2021). Furthermore, some scholars have suggested that the development of new digital tools already includes practices whereby further marginalization of marginalized groups is inscribed into the technology (see e.g., Clegg, 2001). As a solution, some researchers have connected the design and development of the learning tools to the learning processes of the intended users and to their involvement in the design of the tools.

Drawing on a design-based approach to learning, for instance, user motivation has been seen to play an important role for learning (Al-Harthy, 2016; Deci & Ryan, 2008), as has the notion of the learner being active and self-directed to feel empowered (Castañeda & Selwyn, 2018); and that these can be promoted by involving the users early on. Further, Nardi (1996) argued that when learners are involved in the design process, they are also part of a collaborative design practice, a user-driven design which has a potential to be more sustainable. Therefore, according to Costanza-Chock (2020) there is a growing interest in "design justice" and in marginalized groups' design practices, acknowledging the importance of everyday, often unrecognized design practices. However, previous research innovation work and the development and introduction of new technology in the social sciences has pointed to the difficulties of enrolling prospective users in such work (e.g. Beath & Orlikowski, 2019). It is thus important to get a better understanding for how digital tools aimed at supporting immigrants, a group considered as strongly marginalized in the labour market and society, are designed in practice by involving the intended users.

We set out on an auto-ethnographically inspired field study of the design processes and practices involved in developing a digital tool (a platform) for supporting recent immigrants to enter the labour market and society. The empirical material was collected from 2019 to 2022 as part of the Research project *Digital communication – the key to increased integration*, funded by the Swedish Innovation Agency (Vinnova). The project addresses the developing life-long learning strategies for recent immigrants who experience difficulties finding sustainable employment. The project is a collaboration involving higher education institutions, civil society organizations, municipalities, state authorities, and private companies. Our fieldwork mainly included participant observations of project meetings and other project activities such as interviews and focus group interviews involving project members and recent immigrants and actors working with "supporting" them. It furthermore included analyzing documents produced as part of the project. Since a large part of our research took place during the COVID-19

pandemic, it became strongly influenced by the events following the outbreak in 2020, where interviews had to be re-scheduled to Zoom due to the pandemic restrictions, and project activities mainly took place online.

The project is an interesting setting for this study as its methodology included the early involvement of stakeholders who were seen as beneficiaries of the digital support in the design process, i.e., recent immigrants and actors working with labour market integration –to understand the problem area following effect mapping (Nobles et al., 2022; Ottersten & Balic, 2010), a method used to understand the dynamics and impacts of an intervention, and the testing. The participants were recruited from the project members' existing networks, such as recent immigrants participating in work internships in companies and in Swedish for immigrants courses as well as employers from private companies, public officials, and language teachers, and civil society organizations involved in integration support practices.

To enable the analysis of large amounts of processual data collected over the duration of the project, we draw on temporal bracketing theory (Giddens, 1984; Langley, 1999). Here, the material is divided into successive periods ("bracketed"), keeping in mind that these periods are a heuristic device for the researchers to facilitate analysis, not given. Our preliminary results contribute theoretically to a better understanding of the challenges of involving groups categorized as marginalized in design processes aimed at developing tools to support them. Practically, they connect to the field of digital learning with marginalized groups and how the development of methods inspired by a bottom-up perspective may be used meaningfully for designing a digital learning tool for recent immigrants in the labour market.

References

Aaltonen, Satu (2019). The Digitalization of Migrants' Labor Market Integration Services: Boosting or Hindering Social Inclusion?. In *Digital Work and the Platform Economy* (pp. 142-158). Routledge.

Alencar, A. & Tsagkroni, V. (2019). Prospects of refugee integration in the Netherlands: social capital, information practices and digital Media, *Media and Communication*, *7*(2): 184-194. DOI: 10.17645/mac.v7i2.1955

Al-Harthy, I. S. (2016). Contemporary motivation learning theories: A review. *International Journal of Learning and Management Systems*, 4, 99-117.

Bešić, A., Diedrich, A., & Aigner, P. (2021). Organising labour market integration support for refugees in Austria and Sweden during the Covid-19 pandemic. *Comparative Migration Studies*, *9*(1), 1-18.

Beath, C. M., & Orlikowski, W. J. (2019). The contradictory structure of systems development methodologies: Deconstructing the IS-user relationship in information engineering. In *Postmodern Management Theory* (pp. 377-404). Routledge.

Bradley, L., Bartram. B., Al-Sabbagh, K.W., & Algers, A. (2020): Designing mobile language learning with Arabic speaking migrants, *Interactive Learning Environments*, DOI: 10.1080/10494820.2020.1799022

Castañeda, L., & Selwyn, N. (2018). More than tools? Making sense of the ongoing digitizations of higher education. *International Journal of Educational Technology in Higher Education*, 15(1), 211. https://doi.org/10.1186/s41239-018-0109-y

Clegg, Stewart (2001). Theorising the machine: gender, education and computing. *Gender and Education*, 13(3), 307-324.

Costanza-Chock, S. (2020). *Design Justice: Community-Led Practices to Build the Worlds We Need* (MIT Press, 2020), https://designjustice.mitpress.mit.edu/

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum. http://dx.doi.org/10.1007/978-1-4899-2271-7

Dunleavy, P., & Margetts, H. Z. (2010). The Second Wave of Digital Era Governance. APSA 2010 Annual Meeting Paper, Available at SSRN: https://ssrn.com/abstract=1643850

Giddens, A. (1984). *The constitution of society*. Berkeley, CA: University of California Press.

Gillespie, M., Osseiran, S., Cheesman, M. (2018). Syrian refugees and the digital passage to Europe: smartphone infrastructures and affordances, *Social Media + Society*, *4*(1): 1-12.

Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design science in information systems research. *MIS Quarterly*, *28*(1), 75–105.

Langley, A. (1999). Strategies for Theorizing from Process Data. *The Academy of Management Review*, 24(4), 691-710.

Leurs, K. & Smetz, K. 2018 "Five questions for digital migration studies: learning from digital connectivity and forced migration in(to) Europe", *Social Media + Society*, *4*(1): 1-16.

Nardi, B. A. (1996). Studying context: A comparison of activity theory, situated action models, and distributed cognition. In B. A. Nardi (Ed.), *Context and consciousness: Activity theory and human–computer interaction* (pp. 69–102). The MIT Press

Nobles, J., Wheeler, J., Dunleavy-Harris, K. et al. (2022) Ripple effects mapping: capturing the wider impacts of systems change efforts in public health. *BMC Med Res Methodol 22*(72). https://doi.org/10.1186/s12874-022-01570-4

Ottersten, I., & Balic, M. (2010). *Effektstyrning av IT: Nyttan uppstår i användningen*. Malmö: Liber AB.

Trittin, H., Scherer, A. G., Whelan, G., & Munro, I. (2019). Exploring dark and unexpected sides of digitalization: how digital technologies challenge organizations and organizing. *Call for papers: Special Issue of Organization*, 28(1), 1-5.

Interprofessional collaboration and communication in the implementation of AI technologies

Martin Viktorelius*, *PhD, Assistant Professor, Halmstad University, School of Education, Humanities and Social Sciences, Department of Education, Martin.viktorelius@hh.se*

Simon Larsson, *PhD, Researcher, Gothenburg University, School of Business, Economics and Law, Gothenburg Research Institute (GRI)*

*Corresponding author

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Introduction

The digitalization of society has recently given rise to a new wave of interest in artificial intelligence (machine learning) and its organizational consequences for work and professional knowledge (Faraj, Pachidi et al. 2018). Unlike traditional technology, modern artificial intelligence (AI) is self-learning in the sense that it can autonomously adjust its output (predictions, categorizations, etc.) based on the data that is fed to it. This makes the results and consequences of AI inherently dynamic and changing and sometimes difficult to predict and explain not only by professionals using the systems but even by its creators and developers. AI has therefore been described as a black box and as being opaque to its users (Burrell 2016). This raises the question how sensemaking and understanding of modern day AI is coordinated and practically accomplished *in situ* by developers and practitioners.

The understanding of technology is always situated in particular social practices and cultural contexts (Winograd, Flores et al. 1986, Engeström and Middleton 1996, Coeckelbergh and Funk 2018). Developers and users are often participating in disparate communities of practice with little overlap and mutual knowledge. Technologies that are eventually adopted and enacted by users and their professional communities – as intended by designers or by appropriating functions (Pachidi, Berends et al. 2021) – sometimes end up disrupting and re-shaping epistemic practices; perceptions, relations and meanings constituting the world for that group (Sergeeva, Faraj et al. 2020, Anthony 2021).

This is particularly a possibility in the case of digital technologies that are integrated with artificial intelligence, such as deep neural networks trained on massive amounts of big data (Lebovitz, Lifshitz-Assaf et al. 2022). AI has the potential to radically transform many traditional professions (such as medicine and law) by changing old or opening new epistemic domains hitherto obscured from view for the practitioners, thereby expanding existing realms of knowing. This could imply a shift in workplace learning and potentially in professional jurisdictions (Abbott 1988); With more power and authority given (or taken) by computer scientists in domains where learning is traditionally built on apprenticeship and experience, AI is likely to spur new practices and divisions of expert labor.

Now, the organizational process of implementing and making sense of AI and the transition into new modes of representing and conceiving traditional epistemic objects is not determined by the technology or formal institutional structures (Orlikowski 2000). Understanding is rather likely to be an interactional process of knowledge-sharing, communication and negotiation between developers and users taking place *in situ* and over extended periods of time. It is, however, currently unclear how developers of AI systems coordinate and communicate with professionals regarding the principles, possibilities, functions, risks and limitations of systems designed for particular domains and uses.

Researchers in fields such as information systems and management, have become increasingly interested in how AI tools are actually developed and implemented, and with what consequences for work, knowledge and organizing. A growing number of studies have for instance studied AI in organization and work ethnographically; including Waardenburg, Huysman et al. (2022) study on knowledge brokerage in predictive policing, Lebovitz, Lifshitz-Assaf et al. (2022) investigation of algorithmic opacity in medical diagnoses, van den Broek, Sergeeva et al. (2021) examination of AI in hiring processes, and many more (Barrett, Oborn et al. 2012, Schwennesen 2019, Grønsund and Aanestad 2020).

Aim of this study

In this study we analyze the social interaction between developers and professionals collaborating in a project aimed to develop and implement AI in shipping. We base the investigation on a workplace study approach which is a theoretical-methodological framework for analyzing how technologies feature in organization and work (Heath and Luff 2000, Luff, Hindmarsh et al. 2000). Our research question is: How are explanations and understandings

of AI in the context of a particular work practice produced and coordinated (practically accomplished) between developers and users?

Theoretical orientation & methods

Workplace studies emerged as a response to early developments in artificial intelligence and cognitive science emphasizing the situated nature of human understanding and were opposed to the conventional models of human-computer interaction and organization (Hutchins 1995, Luff, Hindmarsh et al. 2000, Suchman 2007). Designed as ethnographies in domains such as air traffic control rooms, shipping, newsrooms, constructions sites and emergency centers, workplace studies have since there initiation been concerned with detailed investigations of talk-in-interaction and how different technologies feature in interactional accomplishment of organizational practices (Rawls 2008). The critique of the computational theory of human intelligence underlining workplace studies translates to more general methodological principles of how to study organization, interaction and work. In particular, building on ethnomethodology and conversation analysis (Heritage 1984), researchers in this tradition argue that organizational phenomena should not be glossed by analytical terms and narratives invented by researchers but analyzed as the sequential (moment-by-moment) organization of the common-sense reasonings used by people in understanding each other in the production and coordination of work activities (Drew and Heritage 1992, Llewellyn and Hindmarsh 2010). This implies that research interested in exploring practices of AI data production, explanation and deployment, at the intersection of development and use (Bailey and Barley 2020, Waardenburg and Huysman 2022), ought to focus on the situated social interactions and analyze the methods members use to make sense of the technology. In addition to rich ethnographic data, this sort of analyses requires access to naturalistically occurring talk and interaction between developers and users in actual episodes of implementation.

The audio recordings analyzed in this study (consisting totally of a corpus of approximately 80 hours of recording) are a part of a larger ongoing ethnographic investigation spanning over four years where we follow a team of AI developers and professional practitioners (ship crews and shipping company managers) participating in a project which aims to introduce an AI system on the ship bridge to assist the navigators in their everyday work to save fuel. The recordings analyzed here (18 hours) come from meetings between developers and users that were arranged by the former to demonstrate the system to users, inquire into their current practices and guide them through their first trials of the system.

Results

Below we include an excerpt from the corpus to illustrate the type of analysis of the organization of sensemaking of AI that can be gained by taking talk-in-interaction as the unit of analysis. We join the conversation when one of the developers (D) gives one of the captains (C) a compliment for how he is using the system:

D: And I'll- I'll- I'll say by the way, first of all, that's- that's perfect, the way you're using the tool coming into the... I mean having spent- having- having completed half the voyage to do a recalculation from where you are at the moment. That's- that's 100 percent the correct way of- of using the tool. So, that's how we want it to be used because the further along the voyage you go the more relevant weather prognosis and that kind of thing you will get. And- and you might have encountered reasons that for- for the- for differences in the plan that you will kind of up- update according to when you do another recalculation. So, I- I- I really like that you are doing recalculations along the way.

D: And as I- as you wrote in your email to me, the reason for increasing the power I think was... It's slight discrepancy in the weather prognosis? In combination with an earlier ETA Is that correct?

C: Yeah, that's correct. So, we got southerly wind which was blowing up down. And later I got request from agent. They want advance ETA for one hour. So, finally, I got almost 9- 9 000 kilowatts.

D: Right, right. Which is of course the... I mean, there's- there's no other way of- of handling an earlier ETA than- than of course speeding up and powering up. So- so, that's of course very reasonable. But from our perspective, we- I really think that this- this stability and power and the way that you're using this suggested power up until- up until the fact that you know that you can no longer keep using it because things have changed, that is- that is a perfect way of- of addressing this operational problem, essentially.

In the first turn by the developer we see him encourage the captain to do a 're-calculation', i.e. another run of the system, during the voyage, in addition to the calculation done before departure. In particular, he is emphasizing that the systems' prediction (of required power setting for requested speed) is not necessarily valid halfway through

the voyage and that the plan constructed by the computer may turn out incongruent with the contingencies of reality (Suchman 2007). Instead of describing the machine learning output as conclusive he is orienting the captain towards the situated and approximate nature of the AI result and the possible 'encountered reasons' for following or disregarding the system recommendations. The compliment can, moreover, bee seen to parallel the formative feedback given to students in educational settings to encourage desired behavior. In contrast to educational settings where there is an socially sanctioned epistemic asymmetry between teacher and student, the developer is careful (by making a covert explanation sound as an agreement) not to make the captain feel inferior or incompetent to make his own professional judgment. However, in the next following turns the developer is specifying the acceptable and accountable reasons for diverting from the AI plan ('discrepancy in the weather prognosis' and new management instructions from land). These are the 'reasonable', or allowable, reasons for making own judgments and solving the 'operational problem' as defined by the AI system. Unless the captain has any of these reasons, 'stability and power' settings should be maintained as long as possible. Again, we see the developer downplaying his instructions by framing them as 'our perspective' (referring to developers and AI researchers) and insisting on the role of the captain's professional knowledge and decision making ('you know that you can no longer keep using it').

Conclusion

Drawing on an ethnomethodological and conversation analysis workplace study approach we aimed to illustrate how explanations and understandings of AI in the context of a particular work practice are produced and coordinated (practically accomplished) between developers and users. We argue that AI in work and its meaning for professional knowledge and workplace learning could fruitfully be analyzed in terms of its situated social organization. The results show the delicate communicative practices of developers in managing users' expectations of machine learning outputs but also in indicating how professionals' practices must change to take advantage of the alleged rationality of AI.

References

ABBOTT, A. 1988. *The system of professions: An essay on the division of expert labor*, University of Chicago press.

ANTHONY, C. 2021. When Knowledge Work and Analytical Technologies Collide: The Practices and Consequences of Black Boxing Algorithmic Technologies. *Administrative Science Quarterly,* 66**,** 1173-1212.

BAILEY, D. E. & BARLEY, S. R. 2020. Beyond design and use: How scholars should study intelligent technologies. *Information and Organization,* 30.

BARRETT, M., OBORN, E., ORLIKOWSKI, W. J. & YATES, J. 2012. Reconfiguring Boundary Relations: Robotic Innovations in Pharmacy Work. *Organization Science,* 23**,** 1448-1466.

BURRELL, J. 2016. How the machine 'thinks': Understanding opacity in machine learning algorithms. *Big Data & Society,* 3.

COECKELBERGH, M. & FUNK, M. 2018. Wittgenstein as a Philosopher of Technology: Tool Use, Forms of Life, Technique, and a Transcendental Argument. *Human Studies,* 41**,** 165-191.

DREW, P. & HERITAGE, J. 1992. *Talk at work: Interaction in institutional settings*, Cambridge Univ Pr.

ENGESTRÖM, Y. & MIDDLETON, D. 1996. *Cognition and communication at work*, Cambridge University Press.

FARAJ, S., PACHIDI, S. & SAYEGH, K. 2018. Working and organizing in the age of the learning algorithm. *Information and Organization,* 28**,** 62-70.

GRØNSUND, T. & AANESTAD, M. 2020. Augmenting the algorithm: Emerging human-in-the-loop work configurations. *The Journal of Strategic Information Systems,* 29.

HEATH, C. & LUFF, P. 2000. *Technology in action*, Cambridge university press.

HERITAGE, J. 1984. *Garfinkel and ethnomethodology*, John Wiley & Sons.

HUTCHINS, E. 1995. *Cognition in the Wild*, MIT press.

LEBOVITZ, S., LIFSHITZ-ASSAF, H. & LEVINA, N. 2022. To Engage or Not to Engage with AI for Critical Judgments: How Professionals Deal with Opacity When Using AI for Medical Diagnosis. *Organization Science,* 33**,** 126-148.

LLEWELLYN, N. & HINDMARSH, J. 2010. *Organisation, interaction and practice: Studies of ethnomethodology and conversation analysis*, Cambridge University Press.

LUFF, P., HINDMARSH, J. & HEATH, C. 2000. *Workplace studies: Recovering work practice and informing system design*, Cambridge university press.

ORLIKOWSKI, W. J. 2000. Using technology and constituting structures: A practice lens for studying technology in organizations. *Organization Science,* 11**,** 404-428.

PACHIDI, S., BERENDS, H., FARAJ, S. & HUYSMAN, M. 2021. Make Way for the Algorithms: Symbolic Actions and Change in a Regime of Knowing. *Organization Science,* 32**,** 18-41.

RAWLS, A. W. 2008. Harold Garfinkel, ethnomethodology and workplace studies. *Organization studies,* 29**,** 701-732.

SCHWENNESEN, N. 2019. Algorithmic assemblages of care: imaginaries, epistemologies and repair work. *Sociol Health Illn,* 41 Suppl 1**,** 176-192.

SERGEEVA, A. V., FARAJ, S. & HUYSMAN, M. 2020. Losing Touch: An Embodiment Perspective on Coordination in Robotic Surgery. *Organization Science,* 31**,** 1248-1271.

SUCHMAN, L. 2007. *Human-machine reconfigurations: Plans and situated actions*, Cambridge University Press.

VAN DEN BROEK, E., SERGEEVA, A. V. & HUYSMAN, M. 2021. When the Machine Meets the Expert: An Ethnography of Developing AI for Hiring. *MIS Quarterly*.

WAARDENBURG, L. & HUYSMAN, M. 2022. From coexistence to co-creation: Blurring boundaries in the age of AI. *Information and Organization,* 32.

WAARDENBURG, L., HUYSMAN, M. & SERGEEVA, A. V. 2022. In the Land of the Blind, the One-Eyed Man Is King: Knowledge Brokerage in the Age of Learning Algorithms. *Organization Science,* 33**,** 59-82.

WINOGRAD, T., FLORES, F. & FLORES, F. F. 1986. *Understanding computers and cognition: A new foundation for design*, Ablex Publishing Corporation

Mapping of digital projects cooperation through and within a municipal organization – Experiences from Trollhättan, Sweden

Rudström, Hedvig. *Doctoral Student, Division of Urban Planning and Development. University West, School of Business, Economics, and IT. SE-461 86 Trollhättan, Sweden, hedvig.rudström@hv.se*

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Introduction

Urban planners and local governments show increasing interest in the Digital Twin City (DTC) concept. This is a relatively new concept, introduced in the beginning of the 2000s (Grieves, 2019) and was mostly used in production engineering (Batty, 2018). However, with the increased interest of "ICT" (Information and Communications Technology) and "smart cities" in urban research during the last century the concept of a digital twin was applied on cities in 2017 (World Economic Forum, 2022). The Digital Twin concept is in its most strict definition is "a mirror image of a physical process that is articulated alongside the process in question, usually matching exactly the operation of the physical process which takes place in real time" (Batty, 2018, p. 817). The application of the digital twin concept in cities is to create a model of the physical process in order to, based on real time data, aid in decision making. With the use of visualized and contextualized real time data planners, civil servants, businesses, and citizens can simulate scenarios in the model before performing it in the "real world." Hence, DTC (digital twin city) is regarded as having the potential to be a more effective and efficient tool in understanding and solving the challenges facing urban planners but can also be a tool to reshape the governance structures of cities today. However, attempts to integrate the DTC concept have focused on integrating quantitative data into the model (Thuvander et al. 2020). Charitonidou (2022) challenged the framework of the digital twin as enhancing the participation possibilities of citizens and urban actors because of the a) limited sets of variables and processes and b) the same variables and processes lack appreciation of the social aspects and qualitative measures of the urban context (p.249).

This project aims to look at the concept and adaptation of the DTC concept through the case of Trollhättan municipality, located in Västra Götaland County in Western Sweden. The municipality just launched the project of the digital twin this year and currently it is still in the first steps. Therefore, the project and its processes are still limited to the Maps and Surveying Office (MSO) in the Public Works Administration with work distributed between a few civil servants. Because of the initial stages of this municipal project this article will take part in, not only exploring the existing workflows, but participating in creation of additional frameworks through critical analysis of previous attempts of adopting a digital twin concept on the urban scale and research in the field.

This purpose of this study is to engage in the DTC project as it exists today within the municipality and through close and cooperative analysis create a supplementary framework supporting additional, democratic, and qualitative values in municipal planning in the local context.

Methodology

This project grew through dialogue with the civil servants and managers in the Public Works Administration at Trollhättan municipality as a part of a larger cooperative project between University West and Trollhättan Stad. The study's structure takes its form as a case study and the empirical material consists of dialogue and discussions with civil servants and managers involved in the DTC project and documentation. As mentioned, the DTC initiative is relatively new within the organization, so the material is yet to grow. However, because of the cooperative structure between the researcher and the municipality the opportunity to engage early in the process is favorable, giving the opportunity to look at the process as it is now and contribute with frameworks guiding the way forward.

The methodological foundation will take inspiration from Flyvbjergs (2001) and his understanding of the case study. This approach springboards form the understanding of the social sciences as a science entrenched in the unique case. Flyvbjerg argues for the inquiry of praxis guided by four value-rational questions:

(1)   Where are we going?
(2)   Is this desirable?
(3)   What should be done?
(4)   Who gains and who loses; by which mechanisms of power? (Flyvbjerg, 2018, p.60)

These four questions allow us to look beyond the mere description of phenomena and instead engage in social praxis. An approach similar to that of Flyvbjerg presents a practice that highlights contexts and narratives of what powers are at play, how these mechanisms of power have consequences on the DTC project and finally how these might be changed for other outcomes.

The cooperative structure of this project will contribute to, instead of intensifying agreements of rational within the municipal project, understanding the relationships between rationality and power. Understanding the relationship between what is considered knowledge, and how decisions are made based on the rationality of the organization. The relationship and dialogue between civil servants and politicians, between knowledge, power and democracy will be of interest in the research project and for the framework suggested to the municipal DTC project.

The Digital Twin in Trollhättan Municipality
Formulated by the municipality, the DTC project is aimed at creating the first prototype of a digital twin of the city. The Map and Surveying office (MSO) of the Public Works Administration begins a small-scale effort to create a prototype digital twin and evaluation of a digitalized workflow that will "hopefully lead to something bigger" (Trollhättan municipality, 2022).
In these first stages the focus is the development of the technical aspects, software and data gathering. Efforts to test a 3D software program, evaluate this in relation to what workflows within MSO that can be streamlined using the software is the articulated aim.
The project goals are as following:
1. Find and test a 3D-visualisations software that can handle different sets of data (import and export)
2. Build a part of Trollhättan digitally that can be used as a testbed for processes
3. Propose a way and test how to communicate a future project with the 3D-visualisation tool
4. Evaluate the software, workflow, and future possibilities

This project will only affect the internal workflows of the Maps and Surveying office and will be conducted during a limited timeframe. If this project proves successful a new project plan will be developed to further the initiative of the digital twin. Therefore, the communication plan of the project is not developed, nor prioritized however "in the event that someone else within the administration or the city is interested, the project can be mediated" (Trollhättan municipality, 2022).

As mentioned before, because of the initial stages of the municipal project this article will, based on what has been done and planned (although limited), explore what can be done, and what should be done.

A digital project like the DTC initiative contains more aspects than only the development of the technological product, efficiency of software or streamlining of existing workflows. It can be argued that it also creates new ways of working, new practices, and priorities within the municipal planning process. Because of this shift in knowledge creation and production, the article argues for engagement in what Flyvbjerg calls the phronetic social science, the focus on deliberative action, and Lefebvre spatial triad that makes important spaces predominant position in how we use, understand, utilize and engage in the world.

Theoretical discussion
Central to the idea of the digital twin city is the concept of *abstraction*. Abstraction in this sense is represented by the blurred line between the physical system and the digital representation in the digital twin concept. This article engages in the idea of abstraction through the work of the spatial theorist Henri Lefebvre and mainly his work *The production of space* (1991). In his work he establishes space as made up by three dimensions, illustrated below.
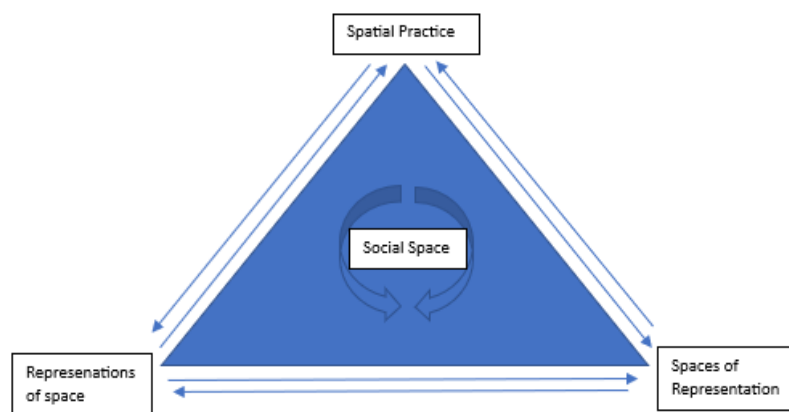
The spaces of representation, the lived space. This is the dimension of lived experience, appropriated by its users. *The representation of space*, also conceived space, is the abstract representation of space (plans, maps, symbols, and codes). And *spatial practice*, or perceived space, the mediation between the two. Consequentially, Henri Lefebvre´s understanding of *abstract space* is "the devastating conquest of the lived by the conceived, by abstraction" (Lefebvre, 1980, p.7). Abstract space is, according to Lefebvre (1991) and later further developed by Purcell (2020), the manifestation of space as a quantified, rationalized, and homogenous space (Purcell, M., 2020, p. 8). The abstract space is the spatial project undertaken by dominant powers (including but not limited to the capitalist class interest) or what Lefebvre called the State Mode of Production (SMP) the phenomenon where the state "plans and organizes society "rationally", with the help of knowledge and technology, imposing analogous, if not homologous, measures irrespective of political ideology, historical background, or the class origins of those in power (Lefebvre, cited in Wilson, 2013, p.369). To put it in some perspective, in contrast to abstract space there is *absolute space,* the space of ancient civilization that emerged "from the consecration of "fragments of nature," such as caves, mountains" (Wilson, 2013, p. 367). In the triad it would fit in as a lived space, rather than conceived space. Another aspect of Lefebvre´s theory of space fitting to place into this project would be his influences from Heidegger´s critique of technology. This critique is not directed toward the technological products or processes themselves but at the way of thinking it produces. The abstract "way of revealing" the world that reduces nature to a reserve (Wilson, 2013). Lefebvre´s critique of this technocracy of spatial planning, the overlooking of the lived experiences which he considers the "fundamental feature of the human condition" (Lefebvre, cited in Wilson, 2013, p. 371). What is repressed through abstract space is differentiated space (in Lefebvre´s work mentioned as counter space). Differentiated space is the space created by its inhabitants that, by the vary act of living and persisting in space, is the medium through which differential space is created. Purcell (2020) argues that abstract space cannot create itself – it must react to the creation of differential space (p.10). Therefore, in order to resist abstract space, the users of space only must focus their efforts on creating a productive and regenerative, democratic space. The resistance happens through everyday tasks.

Given this short outline of space as understood by Lefebvre, the discussion of the DTC project becomes one of abstraction. First, the understanding of the digital twin as not only a passive representation of the physical process, but a reactive and proactive model establishing methods of action. The aim of the digital twin as we can see it being adopted in urban planning is to establish a real-time connection between the conceived and lived, the virtual and the real (Charitonidou, 2022). The aim is not only to observing the real world through a easily accessed simulation but also to transform it. Therefore, the importance to, together with the likes of Lefebvre and Heidegger, look beyond the technological product itself and see in which ways technology shifts our understanding of the world.

Another important aspect brought up by Charitonidou (2022) is that of local contexts of data and the remark made by Borgman that "entities become data only when someone uses them as evidence of a phenomenon, and the same entities can be evidence of multiple phenomena" (Borgman, cited in Charitonidou, 2022, p. 239). We cannot buy into the universality of quantitative data used in this way in the DTC, without thinking of the specific and local contexts in which it is created and applied. If we do not challenge and engage critically in the idea of digital universalism (an idea of everyone equalness once online and universality of big data) we downplay the importance of context and (big) data supplants all other types of knowing. Instead of the dominating technological perspective of DTC and other smart city projects Charitonidou (2022) suggests a focus on socio-technical perspectives. This is in line with the overall aim of the municipal comprehensive plan that assert Trollhättan as a vibrant city and: "a vibrant city depends on people, and it is for people we build the city" (CP Trollhättan 2013) and that the purpose of the regulations is to "while taking into account the freedom of individuals, promote the development of a society with equal and good social living conditions and a good and long-term sustainable living environment" (CP Trollhättan 2013). This is also in line with the new national policy for "designed living environment" that emphasizes good living environments, art, quality, and a holistic view of a democratic dialogue and decision-making in planning processes to create an attractive designed living environment. Such values as well as safety, security, recreation, and democracy can be difficult to integrate in a digital representation of the city based on quantitative geographical information.

Framework
The point of departure in this project is to highlight the learning processes behind the construction of space in the digital representation and the flow of knowledge between the lived space and the representation. The aim is thereafter to suggest a supplementary workflow emphasizing and recognizing the qualitative values of and everyday practices of the city. How can non-quantitative aspects of the built environment be integrated into an exceedingly digital planning process?
This framework is based on the methodology of Flyvbjerg (2018) and will take a similar form of inquiry – however, adapted to the municipal organization. The questions posed by Flyvbjerg will be merged with questions already

articulated by the municipality. The initial stages of the framework will be focused on questions 3 and 4 by the municipality.

Note that this framework is not meant to slow or hinder the processes in motion within the municipality. This article does not suggest stopping the DTC project. It is, however, a suggestion to supplement work processes by introducing alternative aspects and highlight the things many times overlooked by magnified digitalization project. This includes looking at the DTC "from above" and analyzing the consequences and implications the project has on the future planning process, what is not included in the planning process, what and who is favored or disadvantaged.

Conclusion

This project has looked at the digital twin city project as it looks in Trollhättan municipality. The first stages of the initiative have been outlined and discussed. Thereafter, through Lefebvre´s work on spatial production looked at the creation of the digital twin, not only through the model creation but the shift in how we perceive the world. The overall aim of looking at a framework for the continued project.

References

Batty, M. (2018). *Digital twins. Environment and Planning B: Urban Analytics and City Science*. 45(5), 817–820. https://doi.org/10.1177/2399808318796416

Charitonidou, M. (2022) "*Urban scale digital twins in data-driven society: Challenging digital universalism in urban planning decision-making*," International journal of architectural computing, 20(2), pp. 238–253. Doi: 10.1177/14780771211070005.

Flyvbjerg, B. (2012) *Making social science matter: Why social inquiry fails and how it can succeed again*. Translated by S. Sampson. Cambridge, England: Cambridge University Press.

Grieves, M., (2019) *Virtually Intelligent Product Systems: Digital and Physical Twins, in Complex Systems Engineering: Theory and Practice*, S. Flumerfelt, et al., Editors. American Institute of Aeronautics and Astronautics. p. 175-200.

Lefebvre H. (1991) *The Production of Space*. Oxford. Balckwell

Lefebvre, H. (1980) *La présence et l'absence: contribution à la théorie des représentations*. Mexico City: Mexico Fondo de la Cultura Económica.

Purcell, M. (2022) "*Theorizing democratic space with and beyond Henri Lefebvre*," Urban studies (Edinburgh, Scotland), 59(15), pp. 3041–3059. Doi: 10.1177/00420980211067915

Thuvander, L., Latino, F., Zangelidis, C., Adelfio, M., Naserentin, V. & Logg, A. 2020, "Towards spatial integration of qualitative data for urban transformation - Challenges with automated geovisualization of perception of urban places", IOP Conference Series: Earth and Environmental Science.

Trollhättans stad (2022) Digital Tvilling Pilot-Projektplan. Trollhättan: Trollhättans stad Kart- & Mätkontoret

Trollhättans stad (2013) Översiktsplan 2013: Plats för framtiden. Trollhättan: Trollhättans stad. Available at: https://www.trollhattan.se/startsida/bygga-bo-och-miljo/kommunens-planarbete/oversiktsplaner/antagna-oversiktsplaner/ [Accessed: 2022-11-15]

World Economic Forum (2022) Digital Twin Cities: Framework and Global Practices. Available: https://www.weforum.org/reports/digital-twin-cities-framework-and-global-practices/#:~:text=The%20digital%20twin%20city%20is,feasible%20path%20for%20urban%20upgrading. [Accessed: 2022-11-15]

Wilson, J. (2013) "The devastating conquest of the lived by the conceived': The concept of abstract space in the work of Henri Lefebvre," Space and culture: the journal, 16(3), pp. 364–380. Doi: 10.1177/1206331213487064.

YESTERDAY, TODAY AND TOMORROW -AN IMPACT STUDY ON SOCIETAL CHALLENGES ON THE ORGANIZATIONAL KNOWLEDGE CREATION IN PRAXIS MODEL

**Panagiota Koulouvari Rosenqvist, senior
researcher,** *Stockholm School of Economics
Institute for Research (SSE SIR),*
panagiota.rosenqvist@hhs.se

Abstract
This executive summary presents a work in progress towards an updated organizational knowledge creation in praxis model, reacting to societal challenges for dynamically contributing to a sustainable future.

A learning organization manages to transform its members' tacit knowledge to explicit knowledge and maintain it in the organizational milieu. Twenty years ago, a *plan for action* and a *structured model*, applicable to companies interested in knowledge creation in praxis, was developed (Koulouvari 2000, in Koulouvari 2001). The model was inspired, among others, by the work of Nonaka and Takeuchi on The Knowledge Creating Company, Chris Argyris' work on Organizational Learning and Edgar Schein's on Organizational Culture. A research work was set up to explore: (a) how can we develop knowledge-creating patterns in an organization? (b) how can organizational members use these knowledge-creating patterns? and (c) how can organizational members embed such patterns into their organizational milieu? As a result, a structured model that suggests a systematic approach towards organizational knowledge creation in praxis was developed. Two key components in a knowledge creating process are: a) an "Organizational Arena", where people can interact, exchange experiences, and try new ways of thinking, b) the "Window of Learning", which acts as information source for new ideas.
At the time around year two thousand, organizations concerned about their *competitive advantage*, *new product development*, *reducing costs* to increase profit, grow their market share, but also *solving problems*, *manage resources* and *adapt new technology*, while they were also keen to aspects of *corporate social responsibility*.
Today, at year twenty twenty-two, the world has undergone dramatic disruptions that have significantly infected the society as a whole. Most of the challenges have taken place the last only three to four years. United Nations initiated an urgent call for action and seventeen sustainable development goals to meet, before year twenty thirty. However, continues environmental disruptions, new war situations, emerging immigrations waves, pandemic burst out and economic inequality that increases dramatically, only add to the societal challenges. Moreover, exponential technologies exceed patterns of digital Darwinism and pose their own challenges and urge for further attention and consideration.
Nowadays, organizational concerns, seriously embrace *sustainability*, *exponential technologies*, while organizations are in need to adapt their *business models* and *organizational processes*.
This study is set up to explore *how societal challenges impact the organizational knowledge creation in praxis model.* In this paper, the aim is twofold: (a) to explore key concepts that are relevant for *organizational knowledge creation in praxis* nowadays and accordingly (b) adapt the *organizational knowledge creation in praxis model.*
To explore key concepts and current concerns that are relevant for *organizational knowledge creation in praxis* nowadays, digital methods are employed. The use of digital methods, such as *bibliometric analysis* provide comprehensive overview of the currently available and recently produced scientific research work. Accordingly, in this study, *bibliometric analysis on literature reviews* was employed. More specific, the study set up a bibliometric analysis on literature reviews on "organiz(s)ational learning" and on "organiz(s)ational knowledge creation", found at title/ abstract/ keywords at Scopus/ Web of Science/ SpringerLink databases, between years 2018 and 2022.
The analysis provided 48 articles of literature reviews, where 29 articles appeared after "organizational knowledge creation" search, 23 articles after "organizational learning" search, while 6 articles appeared in both searches.
Preliminary results of the literature reviews, form three clusters of articles, which indicate key concepts and current concerns related to *organizational knowledge creation* and *organizational learning*. One cluster of articles **validates** various aspects of the *organizational knowledge creation in praxis model*. Another cluster of articles indicates that the field(s) of *organizational knowledge creation* and/ or *organizational learning* is(are) **emerging.** The third cluster of articles **adds-on** elements for consideration to the *organizational knowledge creation in praxis model*. Such elements include *technology* and *sustainability*, impacting *organizational knowledge* creation and/ or *organizational learning*. These articles are further elaborated in order to be embedded to the *organizational knowledge creation in praxis model.*

Based on this study the field of *organizational knowledge creation in praxis*, is still emerging. Although societal challenges impact organizations, knowledge creating and organizational learning processes are organizational assets, empowered to address and tackle societal challenges while being dynamically active and engaging.
This study contributes to the dialogue towards organizational knowledge creation and sustainability in praxis.
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Being an automaton or an autodidact?
On professional-skill and learning in a digitalized working-life

Anders Sandblad, PhD in Work-Integrated Learning, *Combitech AB, Sweden*
anders.sandblad@combitech.com

Introduction

An important aspect of digitalization refers to the nature and development of human *professional-skill* and what happens when work is instrumented with technology. In contemporary educated discourse this aspect has been overshadowed by the advancements of AI and other digital technology, and its potential to help solve many important challenges in society and working-life. This article is about knowledge related long-term risks of using technology, and how these risks can be prevented. The purpose is to contribute to the understanding of what is required of a proficient worker in terms of professional-skill and learning in a sustainable digitalized society and working-life.

By *professional-skill* I refer to knowledge that is used to solve the tasks one is faced with (Göranzon 2009), i.e., knowledge used in the encounter with unique individual practical events and the ability to perform situated judgmental and responsible actions and interventions even when facing unforeseen events. It includes knowledge that is not only a result of theoretical studies, but also of practical *experience*. Becoming experienced is not synonymous with having been through a lot, but rather a question of how you have understood what you have been through (Sjunnesson 2007) – it is a result of *reflection*.

Digital technology is based on storage, processing, and transmission of information. In a society and working-life that is increasingly digitalized, there is a risk that information is given increased space at the expense of other forms of knowledge, i.e., *episteme* is given increased space at the expense of *techne* and *fronesis* (Aristotle 2012, pp161-185), emphasizing the cognitive view of humans as merely information processors and reality as information to process.

The Mechanized Man and Human Automatons

This article draws on my PhD thesis *Professional-skill Machines Humans* (Sandblad 2021). The thesis is a synthesis of a selection of case-studies on professional-skill and use of technology in different contexts. The case-studies were mainly performed at the Swedish Centre for Working Life and the Royal Institute of Technology from the 1970s onwards, but also two recent case-studies performed at University West are included.

The results of the synthesis show that people gradually adapt their way of thinking and perceiving reality to the technology they use. This means that workers in a highly digitalized working-life start to think and act like information processors, gradually becoming like the machines they use on an intellectual level. There is an ongoing *inner mechanization*, which can be contrasted with the *outer mechanization* of human muscle power that the industrial revolution entailed during the 19th and 20th century.

The intellectually *mechanized man* perceives and describes reality in the terms of the technology he uses and gradually loses the ability to discern nuances, handle contradictions and make qualified judgments. The concepts of *Turing's man* (Bolter 1984; Granström & Göranzon 2011) and *functional autism* (Göranzon 2009, pp139-142) capture these phenomena. *Tacit engagement* (Gill 2015) is a related concept that stands for the *tacit knowledge* that can only be expressed when people share physical space, i.e., what is at risk when digital communication technology is used for interaction and collaboration.

"If we become humans in interaction with a living environment, what does the machine shape us into?", ask Granström and Göranzon (2011, p72). The meaning of the concept of the *mechanized man* is that after using technology for a longer period, people may be reduced to machines on an intellectual level. When a machine is perceived as superior to man, it may not necessarily depend only on the advancing capabilities of technology, but also on the fact that humans adapt their thinking and perception of reality to the processes and models implemented by the technology.

Hence, as AI and other digital technology make advancements and the number of application areas increase it is not machines with supposed human abilities and characteristics that we need to pay attention to, but humans who gradually become like machines on an intellectual level – *human automatons*. An automaton is "an individual, who has once and for all stayed with his nature or adapted to a certain role in life, stopped growing with a word.", the famous Swedish author Strindberg (2020) wrote. The knowledge of an automaton has ceased developing gradually and solidified.

When technology function as a system, rather than a tool (being the extended arm of the worker), there is also a risk that workers become merely like cogs in the system with reduced space for action, reflection, and learning. The relationship between a tool and its users can be understood in the light of an anecdote about the famous author Ernest Hemingway when he met a photographer at a photo exhibition:

> Hemingway asked a photographer "It was a very good picture, what camera did you use" and got the answer "I liked your book – The old and the sea – what typewriter did you use for it?" (Göranzon & Mouwitz 2005, p114)

The first point of the anecdote is that the critical knowledge does not reside in the tool, but in the skilled workers. Another point is that technology must be designed to leave room for the personal judgment of the workers. Else, when tasks are handed over to technology there is a risk that they turn into *automatons* who do not think for themselves and do not learn from experience, but only repeat. I argue though, that designing technology appropriately is not enough

Bildung and Autodidactic Learning

To safeguard the professional-skill of humans in a society and working-life increasingly dominated by digital technology it is also necessary for workers to develop a certain degree of *bildung* and an ability to *learn continuously from personal experiences* – to be an *autodidact*. Lack of bildung and lack of autodidactic ability means surrendering to circumstances and becoming an automaton, with limited or no authority over one's own knowledge and work.

I regard bildung as a form of knowledge that requires a certain degree of versatility (Liedman 2006), an overview of a diversity of perspectives, including not only art and literature, but also mathematics, science and technology, and a lot more. Maintaining different perspectives in parallel, seeing their limits and knowing when different tools, models and theories are usable, is a sign of bildung (Göranzon 2011). Rene Descartes' division of man into body and soul may illustrate. Descartes is usually regarded as one of the foremost representatives of the medieval mechanical worldview and of rationalism, i.e., the idea that all knowledge can be achieved through rational thinking. However, he realised that there is a limit to what we can understand and explain with rational mechanistic thinking. The fact that the human body – the outer – can be explained in mechanical terms does not mean that the whole human can be explained in this way. What Descartes had realized was that the human soul – the inner – is too complex to be explained rationally (Shapin 2018, p159).

The advancements of AI and other digital technology in the last decades seem to cause people to lose their perspectives. Digital technology can help solve many complicated challenges in society and working-life but does not reach the complexity and ambiguity that characterizes human life. "Real life is not computable", wrote Weizenbaum (1980, p114; see also Göranzon 2019). Hence, in an increasingly digitalized working-life, it is central to see and understand the limits of the theories, models, and tools you use in relation to each unique individual context and practical situation. From a professional-skill perspective this is key. Not least important in a highly digitalized society and working-life is the bildung that the arts bring. Using art, literature, and drama as a source for knowledge and reflection can help make visible perspectives of human life that mathematics and science cannot, e.g., from the inside regarding people using technology – an inner perspective.

Bildung can also be regarded as an approach to learning, i.e., as a lifelong personal development process. Considered as a process bildung includes a curious doubt, an ability for self-criticism, and an ability to familiarize oneself with different perspectives. This process includes the development of the whole person and her personal judgement. It is not a static object, but a continuous process that develops the personal self with the experiences one makes throughout life, i.e., the process of creating and recreating the self. There is thus a connection between bildung as a process and learning continuously from experience – *autodidactic learning*.

Being an autodidactic is to have a curious, active, and independent approach to one's own knowledge and learning. I am not referring to autodidactic learning in its absolute sense, but to learning through action and reflection in an exchange with one's own and others experience. Only then can experiences from action be transformed into knowledge that shape the personal judgement. Friberg (2012) uses the terms *self-activity* or *self-thinking-activity* to denote the relationship between action, reflection, and knowledge. He emphasizes its importance: "It is a prerequisite for the individual to be able to come out of his lack of authority and be able to form his own opinion and be able to take responsibility" (Friberg 2012, p101).

Finally, the professional responsibility of workers is key to autodidactic learning. In a case study covering two different process industries, Perby (1995) investigates what knowledge is required of the process operators to master a highly automated factory. The results show that the key knowledge is not being able to interpret abstract metrics and other information presented on the computer screens in the control room, but to develop a deep familiarity with the process and the factory, as well as an ability to manage and learn from the encounter with unexpected events. The critical knowledge was based on the responsibility the operators had for the process and the factory and to develop this knowledge a continuous learning from the experiences the operators made was a necessity. The operators took every opportunity they could to investigate and learn how the factory worked. The

experience required for responsible action can only be learned from action, Bergendal (2003) conclude. The responsibility for the task and its outcome determines not only one's actions, but also what one learns.

Conclusion

To summarize, being an *autodidact* is to think for oneself and learn continuously from responsible actions, developing one's personal experience and personal self through reflection and being ready to handle unforeseen events and ambiguous situations in a judgmental and responsible manner. That is the opposite of being an automaton. Automatons in an increasingly digitalized working-life instead direct their responsibility toward the technology they use and consequently adapt their way of thinking and perceiving reality to this technology. Autodidactic learning is about the continuous development of knowledge and experience that takes place throughout life. The concept has a greater depth than the contemporary common understanding lifelong-learning, which in the increasingly digitalized society and working-life has com to be associated with the need for further education in line with the accelerating technological development. The conclusion of this article is that bildung and the ability to learn from the experiences you make at work are at least as important to develop

References

Aristoteles. (2012). *Den nikomachiska etiken*. Tredje upplagan. Göteborg: Daidalos.

Bergendal, Gunnar. (2003). *Ansvarig handling: uppsatser om yrkeskunnande, vetenskap och bildning*. Stockholm: Dialoger.

Berglund, Johan. (2013). *Den nya taylorismen: om säkerhetskulturen inom kärnkraftindustrin*. Stockholm: Dialoger.

Bolter, David, J. (1984). *Turing's man: Western Culture in the Computer Age*. London: Duckworth.

Friberg, Nils. (2012). *Det ovägbaras tyngd: Vattenfall och ingenjörens roll*. Stockholm: Dialoger.

Gill, Satinder P. (2015). *Tacit Engagement: Beyond Interaction*. London: Springer.

Granström, Helena & Göranzon, Bo. (2011). "Turingmänniskan". *Dialoger*, 87-88/2011, pp.67-82.

Göranzon, Bo. (2009). *The Practical Intellect: Computers and Skills*. Revised edition with a preface by Allan Janik. Stockholm: Santérus.

Göranzon, Bo. (2011). *Bildning och teknologi*. Stockholm: Dialoger.

Göranzon, Bo. (2019). "Introduction to The Last Dream by Joseph Weizenbaum". *AI & Society, Journal of Knowledge, Culture and Communication*, 34(2), pp177-194.

Göranzon, Bo & Mouwitz, Lars. (2005). "Vad är att förstå?". *Dialoger*, 71-72/2005, s99-121.

Liedman S-E. (2006). "Bildning – gammal och ny". Sandin, B. & Säljö, R (red). *Utbildningsvetenskap – ett kunskapsområde under formering*. Stockholm: Carlssons, pp104-125.

Perby, Maja-Lisa. (1995). *Konsten att bemästra en process: om att förvalta yrkeskunnande*. PhD Thesis, Royal Institute of Technology. Stockholm: Gidlunds.

Sandblad, Anders. (2021). *Yrkeskunnande Maskiner Människor* [eng *Professional-skill Machines Humans*]. PhD Thesis, University West, Sweden.

Shapin, Steven. (2018). *The Scientific Revolution*. Second edition. Chicago: University of Chicago Press.

Sjunnesson, Jan. (2007). *Erfarenhet och processer: en metod för reflekterande ledarskap*. Stockholm: Dialoger.

Strindberg, August. (2020). *Fröken Julie*. Stockholm: Modernista.

Weizenbaum, Joseph. (1980). "The Last Dream". Sundin, Bo (red). *Is the computer a tool?* Stockholm: Almquist & Wiksell, pp100-115.

A learning perspective on the interdependency between technology-driven and managerial- driven AI-transformation

Annika Engström*, *Associate professor, Jönköping University, annika.engstrom@ju.se*

Johan Simonsson, *Director Ideation and Research AI Labs, Husqvarna Group, johan.a.simonsson@husqvarnagroup.com*

Nina Edh Mirzaei, *Assistant professor, Jönköping University, nina.edh.mirzaei@ju.se*

*Corresponding author

Introduction

Moving from manual, to automated, to connected AI operations systems implies a significant transformation in the organisation of work (European Parliament, 2015:8) (Brock & von Wangenheim). To understand these "realistic AI" processes, to build competence for certain tasks. it is crucial to understand what organisational competencies that are needed and how to organize knowledge creation processes in practice (Ellström, 2001) Schön used the concept of "knowing–in-action" is nonreflective and solving most everyday practical problems, here understood as *executional learning* (Engström & Wikner, 2017). Thus, this knowing, according to Schön (1983), is not enough to meet more complex situations. To be aware of tacit knowledge, we need to distance ourselves and learn to reflect. More complex, uncertain and unclear tasks require "knowing-on-action" and collaboration between several competences to create new knowledge or to reach a new solution here understood as *developmental learning* (Engström&Wikner)..

Anton et al. (2020) state that in many organisations there is a lack of AI-related competencies that prevent development of the full AI potential. For the development of the field, it is important to study the dynamic interplay between advanced technology and the social side of work from a learning and competence perspective. Therefore, this paper aims to explore how industrial organisations understand their competencies in relation to AI transformation from a knowledge creation perspective.

Research method

The study was part of a collaborative research project with an interdisciplinary research team and representatives from five industrial partners. In four-month cycles the industrial partners engaged in "homework" presented, analysed and discussed in common workshops. For this study, the homework was guided by the DIGITAL approach (Brock & von Wangenheim, 2019) and based on the explanatory model (Anton et al., 2020). The industrial partners studied how resources and competencies related to specific organisational tasks in their own organisations could be identified and defined. To aid the data collection (that was done by the industrial partners themselves) a framework capturing Anton et al.'s (2020) 13 dimensions of competencies (Leadership, Communication, Customer-focused decision making, Business development, Data science/STEM, Agile software development, Initiative and engagement, AI technology, Programming, Digital analysis tools, Data and network technology, Digital competencies, and Data management) was used. For each dimension the partners assesses the competence level: Competence central to the process; Competence exists internally; Competence partly exists internally; Competence does not exist internally; Competence can be gained by development internally; Competence needs to be sourced externally. These were in line with Brock & von Wangenheim's (2019) logic that managers when starting AI project should do "internal resources check".

The data was analysed in four steps. First, focus group data was analysed by the facilitators at each industrial partner. Second, the competence mapping was analysed by the "working groups" at each industrial partner. Third, the transcribed data from the two industrial partners used in this paper were reviewed individually by the authors. Fourth, the cross-disciplinary group of authors from both academia and industrial partners gathered for a common analysis session. This session primarily focused on the data from the competence mapping but also cross-checked with the input from the cross-functional focus groups to triangulate the outcome. During the common analysis the conceptual framework presented in the discussion section was developed through iterations between the theoretical framework based on the findings by Anton et al. (2020), and the data from the project.

Findings

The preliminary findings show differences among the industrial partners in how they view their own competencies. For some organisations organisational structures are in place, e.g., dedicated AI Labs, where the work with understanding the benefits and usage of the technology is ongoing on a rather advanced level. In other organisations the work has just been initiated. Overall, all representatives stress the importance of top management support and the need for dedicated forums. Among the organisations that have come the farthest in their AI transformation the structure given by the proposed framework is not enough. They emphasise the need to further

frame it into also understanding what the competence is associated with and why it is needed. They view the leadership as almost having to have an evangelistic approach to it, where it does not seem to be enough with "only" technical experts.

A conceptual framework, consisting of the relationship between the two dimensions: the managerial competencies and the technical competencies, is developed (Figure 1). The managerial competencies dimension concerns organisation and organising. The technical competencies dimension on the other hand captures the complexity level of the technology that is needed, the system of systems. The diagonal illustrates the relationship between these two dimensions, that is, the relation between technological complexity and organisational ability. The lower part of the diagonal captures isolated, simple processes (presumably internal) while the upper part of the diagonal captures integrated, complex processes (presumably primarily related to external parts and/or actors).. For high levels of technical complexity that requires high levels of technical competencies within the organisation the organisation also needs to advance the managerial competencies and the developmental learning processes. However, while in the long-term perspective we suggest that going off the diagonal will be inefficient and ineffective, hence, waste, it might be needed to do that temporarily, as the organisation develops. We believe that this development can be either technology-driven or organisation-driven.
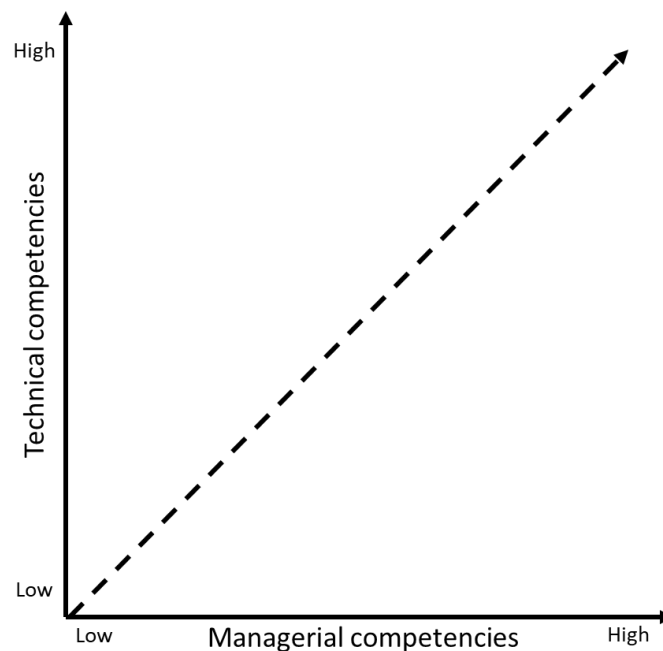

Figure 1 Proposed framework capturing the interplay between managerial and technical competencies

The proposed conceptual framework is intended to help organisations plot their own current position based on the two dimensions and identify what changes are needed to reach the diagonal. It can also be used to define where on the diagonal the organisation ultimately wants to end up. It is not relevant for all companies or even for all sectors overall to be at the top right side. We believe that AI transformation cannot be approached as either technology-driven or managerial-driven, but as an e interdependent process of both dimensions.

REFERENCES

Anton, E., Behne, A., & Teuteberg, F. (2020). *The humans behind artificial intelligence – an operationalization of AI competencies.* Research Papers. 141. https://aisel.aisnet.org/ecis2020_rp/141

Brock, J. K. U. & von Wangenheim, F., (2019). Demystifying AI: What digital transformation leaders can teach you about realistic artificial intelligence, *California Management Review*, Vol. 61, No. 4, pp. 110-134.

Ellström, P. E. (2001). Integrating learning and work: Problems and prospects. Human resource development quarterly, 12(4), 421-435.

European Parliament, Directorate-General for Internal Policies of the Union, Beken, W., Coen, A., Valsamis, D. (2016). *Employment and skills aspects of the digital single market strategy*, European Parliament. https://data.europa.eu/doi/10.2861/809651

Romero, D. et al. (2016) Towards an Operator 4.0 Typology: A Human-Centric Perspective on the Fourth Industrial Revolution Technologies, *International Conference on Computers & Industrial Engineering (CIE46)*, At Tianjin, China.

Reviewing human-centric themes in intelligent manufacturing research

Monika Hattinger*, *Department of Engineering Science, University West, Sweden*

Ulrika Lundh Snis, *School of Business, Economics, and IT, University West, Sweden*

Andreas de Blanche, *Department of Engineering Science, University West, Sweden*

Kristina Eriksson *Department of Engineering Science, University West, Sweden*

Anna Karin Olsson, *School of Business, Economics, and IT, University West, Sweden*

Stanislav Belenki, *Department of Engineering Science, University West, Sweden*

Linnéa Carlsson, *School of Business, Economics, and IT, University West, Sweden*

Abstract

In the era of Industry 4.0, emergent digital technologies generate profound transformations in the industry toward developing intelligent manufacturing. The technologies included in Industry 4.0 are expected to bring new perspectives to the industry on how manufacturing can integrate new solutions to get maximum output with minimum resource utilization (Kamble et al., 2018). Industry 4.0 technologies create a great impact on production systems and processes, however, affect organizational structures and working life conditions by disrupting employees' everyday practices and knowledge, in which competence and learning, human interaction, and organizational structures are key. Hence, new digital solutions need to be integrated with work and learning to generate more holistic and sustainable businesses (Carlsson et al., 2021).

The core Industry 4.0 technologies are built on cyber-physical systems (CPS), cloud computing, and the Internet of things (IoT) (Kagermann et al., 2013; Zhou et al., 2018). In recent years, an array of additional technologies has been developed further, such as artificial intelligence (AI), big data analytics, augmented and virtual reality (AR/VR), cyber security, robotics, and automation. Industry 4.0 aims to create a potential for faster delivery times, more efficient and automated processes, higher quality, and customized products (Zheng et al., 2021). Hence, the ongoing transformation through the technological shift of production in combination with market demands pushes the industry and its production process.

Recent research has substantially contributed to an increased understanding of the technological aspects of Industry 4.0. However, the utilization of technologies is only a part of the complex puzzle making up Industry 4.0 (Kagermann et al., 2013; Zheng et al., 2021). The impact Industry 4.0 technologies and applications have on the industrial context also changes and disrupts existing and traditional work practices (Taylor et al., 2020), management and leadership (Saucedo-Martínez et al., 2018), learning and skills (Tvenge & Martinsen, 2018), and education (Das et al., 2020). This research has shown a growing interest in human-centric aspects of Industry 4.0 (Nahavandi, 2019), i.e., the transformative effects Industry 4.0 has on humans, workplace design, organizational routines, skills, learning, etc. However, these aspects are scarcely considered in-depth.

Given this, and from a holistic point of view, there is a need to understand intelligent manufacturing practice from a human-centric perspective, where issues of work practices and learning are integrated, herein referred to as industrial work-integrated learning. I-WIL is a research area that particularly pays attention to knowledge production and learning capabilities related to use and development when technology and humans co-exist in industrial work settings (Shahlaei & Lundh Snis, 2022). Even if Industry 4.0 still is relevant for continuous development, a complementary Industry 5.0 has arisen to provide efficiency and productivity as the sole goals to reinforce a sustainable, human-centric, and resilient manufacturing industry (Breque et al., 2021; Nahavandi, 2019).

Given this situation, the research question addressed here is: How does state-of-the-art research of Industry 4.0 technologies and applications consider human-centric aspects? A systematic literature review was conducted aiming to identify a future research agenda that emphasizes human-centric aspects of intelligent manufacturing, that will contribute to the field of manufacturing research and practices. This question was based on very few systematic literature reviews, considering Industry 4.0 research incorporating human-centric aspects for developing intelligent manufacturing (Kamble et al., 2018; Zheng et al., 2021).

The literature review study was structured by the design of Xiao and Watson's (2019) methodology consisting of the steps 1) Initial corpus creation, 2) Finalizing corpus, and 3) Analyzing corpus, and we also used a bibliometric

approach throughout the search process (Glänzel & Schoepflin, 1999). The keyword selection was categorized into three groups of search terms, "industry 4.0", "manufacturing", and "artificial intelligence", see figure 1.
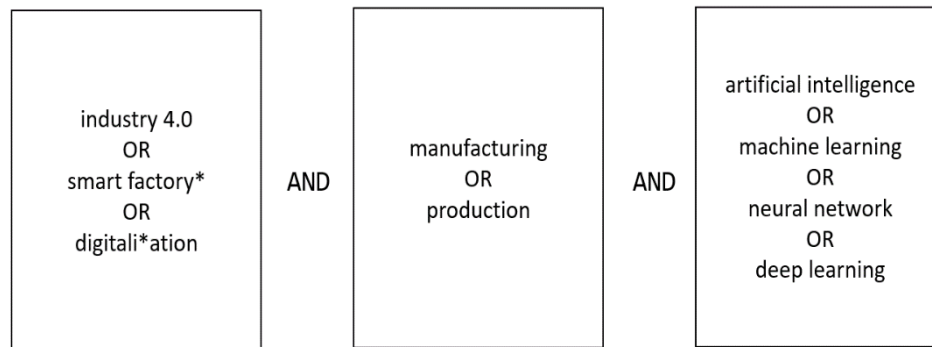

Figure 1. Visualization of the keyword search.

Articles were collected from the meta-databases EBSCOhost, Scopus, Eric, and the database AIS, to quantify the presence of human-centric or human-involved AI approaches in recent manufacturing research. A total of 999 scientific articles were collected and clustered based on a list of application areas to investigate if there is a difference between various areas in which artificial intelligence is used. The application areas are decision-making, digital twin, flexible automation, platformization, predictive maintenance, predictive quality, process optimization, production planning, and quality assessment.

Throughout the review process, only articles that included both AI and human-centric aspects were screened and categorized. The final corpus included 386 articles of which only 93 articles were identified as human-centric. These articles were categorized into three themes: 1) organizational change, 2) competence and learning, and 3) human-automation interaction. Theme 1 articles related mostly to the application areas of flexible automation (11), production planning (9), and predictive maintenance (5). Theme 2 concerned the application areas of production planning and quality assessment (7), and process optimization (7). Finally, theme 3 mainly focused on flexible automation (10), digital twin (3), and platformization (3). The rest of the corpus only consisted of one or two articles in related application areas. To conclude, only a few articles were found that reinforce human-centric themes for Industry 4.0 implementations. The literature review identified obstacles and opportunities that affect manufacturing organizations to reap the benefits of Industry 4.0. Hence, I-WIL is proposed as a research area to inform a new research agenda that captures human and technological integration of Industry 4.0 and to further illuminate human-centric aspects and themes for future sustainable intelligent manufacturing.

References

Breque M, De Nul L, & Petridis A. (2021). *Industry 5.0 – towards a sustainable, human-centric and resilient European industry*. Luxembourg: Publications Office of European Union.

Carlsson, L., Hattinger, M., Olsson, A. K., & Snis, U. L. (2021). Desperately seeking industrial digital strategy: a dynamic capability approach. *International Journal of Information Systems and Change Management*, *12*(4), 345-364.

Das, S., Kleinke, D. K., & Pistrui, D. (2020). Reimagining engineering education: does industry 4.0 need education 4.0? 2020 ASEE Virtual Annual Conference Content Access.

Glänzel, W., & Schoepflin, U. (1999). A bibliometric study of reference literature in the sciences and social sciences. *Information processing & management*, *35*(1), 31-44.

Kamble, S. S., Gunasekaran, A., & Gawankar, S. A. (2018). Sustainable Industry 4.0 framework: A systematic literature review identifying the current trends and future perspectives. *Process safety and environmental protection*, *117*, 408-425.

Taylor, M. P., Boxall, P., Chen, J. J., Xu, X., Liew, A., & Adeniji, A. (2020). Operator 4.0 or Maker 1.0? Exploring the implications of Industrie 4.0 for innovation, safety, and quality of work in small economies and enterprises. *Computers & Industrial Engineering*, *139*, 105486.

Nahavandi, S. (2019). Industry 5.0—A human-centric solution. *Sustainability*, *11*(16), 4371.

Tvenge, N., & Martinsen, K. (2018). Integration of digital learning in industry 4.0. *Procedia Manufacturing*, *23*, 261-266.

Saucedo-Martínez, J. A., Pérez-Lara, M., Marmolejo-Saucedo, J. A., Salais-Fierro, T. E., & Vasant, P. (2018). Industry 4.0 framework for management and operations: a review. *Journal of ambient intelligence and humanized computing*, *9*(3), 789-801.

Shahlaei, C. A., & Snis, U. L. (2022). Conceptualizing industrial workplace learning: an information systems perspective. *Journal of Workplace Learning,* vol. ahead-of-print, https://doi.org/10.1108/JWL-04-2021-0048.

Zheng, T., Ardolino, M., Bacchetti, A., & Perona, M. (2021). The applications of Industry 4.0 technologies in manufacturing context: a systematic literature review. *International Journal of Production Research*, *59*(6), 1922-1954.

Zhou, J., Li, P., Zhou, Y., Wang, B., Zang, J., & Meng, L. (2018). Toward new-generation intelligent manufacturing. *Engineering*, *4*(1), 11-20.

Xiao, Y., & Watson, M. (2019). Guidance on conducting a systematic literature review. *Journal of planning education and research*, *39*(1), 93-112.

Workplace Learning and Digital Transformation in Healthcare:
Literature Review and Tentative Findings

Workplace Learning and Digital Transformation in Healthcare: Literature Review and Tentative Findings

Helena Vallo Hult*, *University West, School of Business, Economics and IT S-461 86 Trollhättan, Sweden; NU Hospital Group, 461 85 Trollhättan, Sweden, helena.vallo-hult@hv.se*

Ann Svensson, *University West, School of Business, Economics and IT S-461 86 Trollhättan, Sweden*

*Corresponding author:

Introduction

Digitalization of society and the workplace brings new challenges and changes in how we work and learn. Like in other domains, healthcare has seen rapid growth in new digital technologies, extending beyond an initial focus on electronic patient record systems (Fitzpatrick and Ellingsen 2013; LeRouge et al. 2007). The digital transformation of healthcare entails changes in the IT environment and affects the health professionals' daily clinical work. It includes changes that require learning and the development of new working methods. The rise of data-driven healthcare, patient-centric technologies and advances in automatized systems, artificial intelligence (AI) and robotics altogether poses new challenges and opportunities for the medical profession (Lebovitz et al. 2019; Vallo Hult et al. 2019). Conventional health IS research and models have focused on isolated systems, individual users and clinical outcomes (Greenhalgh et al. 2019), focusing more on design and implementation than on how clinical end users react to already implemented IT (Abouzahra et al. 2015; Holden and Karsh 2010). Prior research highlight that learning in everyday work needs to be better integrated with digital transformation to achieve the full potential of digitalization. (Sittig and Singh 2010; Vallo Hult et al. 2020). The challenges, thus, are complex and sociotechnical, which calls for a better understanding of existing practices and new competencies required in response to current changes associated with digitalization (Davidson et al. 2018; Wynn and Vallo Hult 2020).

While researchers and practitioners have shown a longstanding interest in understanding the relationship between digitalization and learning at work, much of this work has been conducted in separate streams of literature. There is still a lack of understanding key terminology and concepts, as different terms are used in the literature to describe similar phenomena (Vallo Hult 2021). Experiences from our studies in practice, where the development, implementation, and use of digital technologies involve key activities associated with learning (Svensson and Vallo Hult, 2022), furthermore point to a need for an overview and more insights into this area. This extended abstract presents the first step in an ongoing project in which we plan to conduct an integrative literature review on workplace learning and digital transformation in healthcare, responding to calls for more research that explicitly addresses digital change as learning (Vallo Hult et al. 2022). The research question is twofold: *i) how has workplace learning in healthcare digital transformation been addressed in the literature and ii) what key topics and themes, and central ideas and authors that have influenced and shaped the development can be identified?*

Method

The literature review will focus on research relevant to workplace learning and digital transformation in healthcare. A targeted search will be conducted in the multidisciplinary research databases Scopus and Web of Science, as primary databases for multidisciplinary coverage of international academic journals. Additionally, we will conduct a systematic literature search in PubMed, to include relevant articles in the medical field. We plan on using a concept-centric approach to literature reviews, aiming to identify and follow key concepts in the literature (Webster and Watson 2002). We will also use snowballing and citation analysis techniques (forward and backward tracking of references) to allow for refinement of the initial searches based on new ideas, search terms and literature (cf. Boell and Cecez-Kecmanovic 2014).

Table 1. *Overview of relevant search terms and search strategy*

Workplace learning	"Workplace Learning", "Informal learning", "Learning at work", "Work-based learning", "professional development"
Digital transformation	"Digital transformation" Digitalization "Digital workplace" "Digital workforce" "digital work environment" "digitalization of work", "digital change "
Healthcare	Healthcare, medical, hospital, primary care,

For further analysis, relevant references will be exported to EndNote (reference management system). Inclusion and exclusion criteria will be applied to narrow the results (peer-reviewed articles, conference papers or book chapters in English). Articles will be categorized based on author(s) and year of publication, publication outlet, document type and domain, main findings and call for future research.

Workplace learning in healthcare digital transformation: Tentative findings, discussion and expected contribution As the research has developed in separate streams of research, we expect the literature review to reveal how key concepts have been applied and defined in prior literature, over time and across disciplines. The result section will present synthesized topics and themes and identified central ideas and authors that have influenced and shaped the development of digital transformation in relation to workplace learning in healthcare. The result section will be structured in three themes: i) a summary of definitions and concepts, ii) key findings focusing on workplace learning in digital healthcare in specific and iii) the knowledge gap on workplace learning in digital healthcare. Our empirical research indicate that this literature review has potential to contribute with a better understanding and more in-depth insights into learning in healthcare digital transformation.

REFERENCES

Abouzahra, M., Guenter, D., and Tan, J. 2015. "Integrating Information Systems and Healthcare Research to Understand Physicians' Use of Health Information Systems: A Literature Review," in: Proceedings of the 36th International Conference on Information Systems (ICIS). Fort Worth, TX, USA.

Boell, S.K., and Cecez-Kecmanovic, D. 2014. "A Hermeneutic Approach for Conducting Literature Reviews and Literature Searches," Communications of the Association for Information Systems (34), p. 12.

Davidson, E., Baird, A., and Prince, K. 2018. "Opening the Envelope of Health Care Information Systems Research," Information and Organization (28:3), pp. 140-151.

Fitzpatrick, G., and Ellingsen, G. 2013. "A Review of 25 Years of Cscw Research in Healthcare: Contributions, Challenges and Future Agendas," Computer Supported Cooperative Work: CSCW: An International Journal (22:4-6), pp. 609-665.

Greenhalgh, T., Wherton, J., Shaw, S., Papoutsi, C., Vijayaraghavan, S., and Stones, R. 2019. "Infrastructure Revisited: An Ethnographic Case Study of How Health Information Infrastructure Shapes and Constrains Technological Innovation," J Med Internet Res (21:12), 2019/12/19, p. e16093.

Holden, R.J., and Karsh, B.-T. 2010. "The Technology Acceptance Model: Its Past and Its Future in Health Care," Journal of biomedical informatics (43:1), pp. 159-172.

Lebovitz, S., Levina, N., and Lifshitz-Assaf, H. 2019. "Doubting the Diagnosis: How Artificial Intelligence Increases Ambiguity During Professional Decision Making," New York University).

LeRouge, C., Mantzana, V., and Wilson, E.V. 2007. "Healthcare Information Systems Research, Revelations and Visions," European Journal of Information Systems (16:6), 2007/12/01, pp. 669-671.

Sittig, D.F., and Singh, H. 2010. "A New Sociotechnical Model for Studying Health Information Technology in Complex Adaptive Healthcare Systems," Quality and Safety in Health Care (19:Suppl 3), pp. i68-i74.

Svensson, A., and Vallo Hult, H. 2022. "Leading and Organizing Workplace Learning in Healthcare Digital Transformation: The Proposal of a Conceptual Model," in: Proceedings of the 8th International Workshop on Socio-Technical Perspective in IS Development (STPIS 2022). Reykjavik, Iceland, August 19-20, 2022.: CEUR.

Vallo Hult, H. 2021. "Digital Work : Coping with Contradictions in Changing Healthcare." Trollhättan: University West.

Vallo Hult, H., Hansson, A., and Gellerstedt, M. 2020. "Digitalization and Physician Learning: Individual Practice, Organizational Context, and Social Norm," Journal of Continuing Education in the Health Professions (40:4), pp. 220-227.

Vallo Hult, H., Hansson, A., Svensson, L., and Gellerstedt, M. 2019. "Flipped Healthcare for Better or Worse," Health Informatics Journal (25:3), pp. 587–597.

Vallo Hult, H., Johansson, L.-O., Islind, A.S., and Snis, U.L. 2022. "The Intersection between Information Systems and Workplace Learning: A Systematic Review and Research Agenda," in: Hawaii International Conference on System Sciences (HICSS).

Webster, J., and Watson, R.T. 2002. "Analyzing the Past to Prepare for the Future: Writing a Literature Review," MIS Quarterly (26:2), pp. xiii-xxiii.

Wynn, E., and Vallo Hult, H. 2020. "Platforms and the Public Sphere," in: Proceedings of the 26th Americas Conference on Information Systems. Salt Lake City, UT, USA Virtual event.

University-Industry Collaboration: From contradictions to transformations in work-integrated e-learning practices

Monika Hattinger, *Department of Engineering Science, Trollhättan, Sweden*

Abstract
The manufacturing industry is constantly facing hard times employing key expertise to deploy a digital transformation of Industry 4.0 enabling technologies and applications (Lasi et al., 2014). Challenges of increased industrial digitalization pressure the industry to expand professionals' future knowledge to be capable of new production systems, virtual manufacturing, and digital services. This requires new types of knowledge applicable to transformative work practices and for future adaptation (Ford, 2015). Becoming a competent expert for an entire working life tends to be harder for today's professionals because of digital disruptions (Belski et al., 2016; Susskind & Susskind, 2015), and therefore they continuously need to seek new knowledge and learning as integrated part of work combined with new theoretical knowledge through academic studies in higher education.

Competence development through university-industry collaboration (UIC), is a vehicle for asserting high-technological change and innovative capacities (Ankrah & Tabba, 2015; Sjöö & Hellström, 2019). Specifically, university tailormade courses that enhance the co-construction of knowledge and develop professionals' learning and skills to augment the industrial business demands in the context of Industry 4.0 (Abelha et al., 2020). However, there seems to be a dual situation with the industry effectiveness pressure on the one hand, and the blended competence development opportunities offered by the university, on the other. This situation raises challenges with the different stakeholders' perspectives of inter-organizational collaboration that presumes productive development.

Colliding interests and conflicts on different systemic levels may occur, and inter-organizational collaborations may not per se cause benefits and learning, but rather needs to be analyzed through their inner contradictions as power for change. Contradictions, however, are systemic, embedded in history, developing over time, and cannot be studied directly. Hence, in this study contradictions on various levels are explored, as a power for change (Engeström & Sannino, 2010;2011). Included contradictions are those manifested by the professionals in UIC and intra-organizational situations within the industry organizations. Also, contradictions concerning the professionals' own motivation for learning related to the industry competence demands and the management's lack of, or support for such learning initiatives. Hence, the analytical lens is the industry professionals' knowledge construction that emerges in a work-integrated e-learning (e-WIL) practice of UIC to sustain resilient inter-organizational collaboration through UIC (Hattinger & Eriksson, 2020). The study is conducted within a competence development program of short academic courses targeting industry professionals' knowledge needs, to strengthen individual learning and co-construction of knowledge with the prospect of generating organizational transformations, i.e., the professionals' knowledge generation in a trajectory growing from participants' discursive manifestation of contradictions, actionable solutions towards transformations. Such knowledge generation tends to be temporary, riddled with problems and conflicts, therefore, it is argued to identify systemic contradictions to be used as energizing forces and triggers for development and change (Engeström & Sannino, 2010; 2011).

With the perspectives of professionals' motives, interactions, and experiences, the aim is to grasp inner tensions between different perspectives to reach the kernel of potential future expansive transformations, i.e., the professionals' views concerning the industry objectives, the learning trajectory of engineering subjects, and the e-learning course design.

Given this, the first research question asked is:
What kinds of discursive manifestations of contradictions do industry professionals experience as inner learning motives of competence development for organizational purposes?
To further the understanding of how professionals assert knowledge to generate actionable solutions, the second question asked is:
How are these manifestations negotiated, and turned into actionable solutions and potentially expansive transformations?

Method
The questions investigate the professionals' experiences of their course participation and knowledge construction on a micro-level using the cultural-historical activity theory, CHAT, (Engeström & Sannino, 2010). Engeström and Sannino (2011) have developed a methodological framework that analyzes contradictions through their discursive manifestations. Contradictions do not speak for themselves, rather they become recognized through

people's articulation of tensions and dilemmas. It is through their discursive manifestations during conversations and actions that they are made visible (Engeström & Sannino, 2011).

Data from a longitudinal e-WIL project was collected for three years and consisted of twelve focus group sessions comprising a total of 119 professionals in 15 industry companies. The professionals participated in e-learning courses designed with pedagogy that stimulate work-integrated learning covering knowledge needs such as industrial automation and machine security in robotics, negotiation skills, and machining. A comprehensive analysis of the discursive manifestation of contradictions implies a transition into actionable (possible) solutions toward expansive transformations. The three steps analysis became a powerful approach for grasping learning insights between professionals and understanding the effects of e-learning design and co-construction of knowledge on a systemic level.

Results and contribution

Discursive manifestations of contractions occurred on different levels, concerning the dual situation of the industry effectiveness pressure on the one hand, and the e-WIL course opportunity offered by the university, on the other. The most critical conflict was the lack of industry companies' maturity to support professionals' time and performance related to individual professional career paths that will trigger future expansive transformations. However, the professionals described actionable solutions to many of the defined dilemmas, concerning practical e-learning design problems, which were easy to overcome.

With the concepts of manifestations of contradictions, actionable solutions, and expansive transformations, we have increased our understanding of knowledge and problem-solving processes emerging in UIC networks with many different stakeholders. The article contributes to a developed approach for analyzing discursive manifestations of contradictions toward expansive transformations in workplace practices. It also contributes to empirical findings of inter-organizational collaborations through an innovative work-integrated e-learning context.

References

Abelha, M., Fernandes, S., Mesquita, D., Seabra, F., & Ferreira-Oliveira, A. T. (2020). Graduate employability and competence development in higher education—A systematic literature review using PRISMA. *Sustainability, 12*(15), 5900.

Belski, I., Adunka, R., & Mayer, O. (2016). *Educating a creative engineer: learning from engineering professionals*. Procedia CIRP, 39, 79-84.

Engeström, Y., & Sannino, A. (2010). Studies of expansive learning: Foundations, findings and future challenges. *Educational Research Review, 5*(1), 1-24.

Engeström, Y., & Sannino, A. (2011). Discursive manifestations of contradictions in organizational change efforts: A methodological framework. *Journal of Organizational Change Management, 24*(3), 368-387.

Fenwick, T. (2012). Co-production in professional practice: a sociomaterial analysis. *Professions and professionalism, 2*(2), 1-16.

Ford, M. (2015). *Rise of the Robots: Technology and the Threat of a Jobless Future*: Basic Books.

Grace, A., Gleasure, R., Finnegan, P., & Butler, T. (2019). Enabling service co-production: a theory-building case study. *European Journal of Information Systems, 28*(4), 413-438.

Hattinger, M., & Eriksson, K. M. (2020). Mind the Gap: A Collaborative Competence E-learning Model Evolving Between University and Industry. *Journal of Strategic Innovation and Sustainability, 15*(5), 10-24.

Lasi, H., Fettke, P., Kemper, H.-G., Feld, T., & Hoffmann, M. (2014). *Industry 4.0. Business & Information Systems Engineering, 6*(4), 239-242.

Sjöö, K., & Hellström, T. (2019). University–industry collaboration: A literature review and synthesis. *Industry and higher education, 33*(4), 275-285.

Susskind, R., & Susskind, D. (2015). *The future of the professions: How technology will transform the work of human experts:* Oxford University Press, USA.

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