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A typology of approaches to professional learning and development in post-pandemic multi-location knowledge work in the technology sector

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ABSTRACT

Increased multi-location work reduces face-to-face interaction among knowledge workers and, thus, affects learning in ways we have not yet observed or fully understood. This research examines how employees themselves perceive the impact of remote interaction setting on workplace learning. The study utilises a mixed-methods approach, and the data were collected from 33 knowledge workers working in the technology sector in Finland through interviews and surveys. The ideal-type analysis revealed four ideal types in relation to remote interaction and learning: isolated and struggling, neutral, thriving and adaptive learners. Isolated and struggling learners experienced remote interaction as a hindrance due to reduced spontaneous interactions and knowledge sharing. Neutral learners found no significant impact on their learning. Thriving learners benefited from the flexibility and technological solutions of remote interaction, enhancing their learning opportunities. Adaptive learners experienced both positive and negative impacts, depending on the task. The findings suggest that the impact of remote interaction on learning varies between individuals, as employees have different learning preferences.

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Multi-location work; knowledge work; workplace learning; informal learning; ideal-type analysis

Introduction

Since the COVID-19 pandemic, multi-location knowledge work has become more prevalent, with many knowledge workers choosing not to return to shared premises and face-to-face work at the same scale as before the pandemic (Šmite, Klotins, and Moe 2025). Knowledge work refers to work that requires advanced education and continuous learning, with abstract knowledge and information technology playing an integral role in work processes (Pyöriä 2005). Although certain types of tasks, such as tasks requiring concentration, have been argued to be more effective when done remotely (Birkinshaw, Cohen, and Stach 2020), work that necessitates teamwork, such as negotiation or joint

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brainstorming, has been affected and remote work has been found to be inefficient compared to the face-to-face setting (Whillans, Perlow, and Turek 2021).

In the context of knowledge work, professional learning and development are important for the successful implementation of tasks and, often motivated by the professionals themselves, cover all kinds of learning experiences, including those promoted through organisational interventions (Day 2012). This study examines professional learning and development through the lens of workplace learning. As the shift to multi-location work has altered the way knowledge workers interact, our research focuses on employees' experiences of how these changes affect workplace learning. Workplace learning may encompass both formal and informal learning activities (Collin 2002; Kyndt and Baert 2013; Manuti et al. 2015; Sawchuk 2008). While formal workplace learning is characterised by structured learning content, time and objectives, informal workplace learning occurs through daily work-related activities and personal interactions, which are not restricted to intentionally created learning environments (Kyndt and Baert 2013). Workplace learning is inseparable from engaging in work practices; people acquire knowledge and skills through engaging in daily tasks (Billett 2004; 2014). It has been suggested that as much as 70–90% of organisational learning occurs informally (Cerasoli et al. 2018).

Increased multi-location work reduces face-to-face interaction among knowledge workers, thus affecting learning in ways we have not yet observed or fully understood. Informal face-to-face encounters, such as chats at coffee machines and during lunch breaks, have been identified as important learning opportunities (Zajac, Randall, and Holladay 2022). These informal conversations are limited in multi-location work settings, which makes spontaneous and informal information sharing and learning more difficult (Waizenegger et al. 2020). Although face-to-face encounters can be partially replaced by virtual meetings, these remote interactions require more effort, cause fatigue and include more distractions, reducing spontaneous interaction within the work community (Lim 2024). It has also been found that pre-meeting talk occurs less frequently in remote meetings compared to face-to-face encounters (Waizenegger et al. 2020). Overall, the communication characteristics of virtual meetings have been found to have a negative influence on workplace learning and work relationships (Lim 2024). However, virtual meetings represent only a narrow perspective on multi-location work and learning. Remote and multi-location work have been identified as a challenge for social learning and knowledge sharing (Zajac, Randall, and Holladay 2022).

Research is needed on the impact of multi-location work on workplace learning

Recent news reports highlight a trend where many large organisations are considering restrictions on remote work to improve efficiency. Nevertheless, it has been predicted that the future of work appears to be increasingly inclined toward the hybrid mode (Šmite, Klotins, and Moe 2025). One of the key questions in the current context is how multi-location work and the resulting increase in virtual working and remote interactions affect workplace learning (Zajac, Randall, and Holladay 2022). Pre-pandemic research may no longer be fully applicable, nor are studies conducted during the COVID-19 pandemic when forced remote working was widespread (Torres and Orhan 2023). The growth of remote work has fundamentally reshaped how work is perceived.

Regarding multi-location work and learning, some perspectives, such as the impact of virtual meetings on learning (Lim 2024), the transfer of organisational knowledge between old and new employees (Oppong Peprah 2024) and digital work practices that promote informal workplace learning (Karhapää, Hämäläinen, and Pöysä-Tarhonen 2025), have been studied. However, the overall relationship between multi-location work and workplace learning remains unclear from the perspective of employees.

This study investigated professional learning and development, particularly informal workplace learning in the current multi-locational work context, and considers the individual experiences of employees regarding the impact of social interaction on learning. Since interaction is an important aspect of informal learning and the shift to multi-location work moves face-to-face encounters into remote ones, informal learning is approached from the viewpoint of remote interaction. Specifically, our study sought to explore the individual aspects of workplace learning by identifying groups of workplace learners in relation to remote interaction, by utilising the ideal types analysis (Stapley, O'Keeffe, and Midgley 2022) and supplementary questionnaire data to compare these groups. The study sets out to answer the following research question: *How do employees perceive the impact of remote interaction on workplace learning?*

Organisations have much to improve in terms of learning in a hybrid work environment (Oppong Peprah 2024). To help organisations make informed and research-based decisions regarding remote work policies, research on the impact of multi-location work on informal learning is crucial. The study's findings can assist organisations to recognise and address the diverse needs of employees regarding informal learning in multi-location work settings. Supporting learning and development at work not only enhances employee well-being but also reduces turnover intention, that is, their likelihood of leaving the organisation (Lehtonen et al. 2022). By understanding how employees perceive and engage in learning, particularly in the context of multi-location work, organisations can enhance both productivity and employee engagement.

Theoretical perspective

Hybrid work, also referred to as multi-location work, refers to an arrangement in which individuals and teams conduct their tasks and responsibilities across multiple physical locations (Oppong Peprah 2024). This can include working from various offices, coworking spaces, home offices or other remote locations. In knowledge work, employees usually have the flexibility to choose, at least to some extent, where they wish to perform their tasks, frequently splitting their time between on-site and remote locations (Leonardi, Parker, and Shen 2024). The following sections discuss what is known about the changing nature of interaction in multi-location work and the impact of multi-location work on professional learning and development, in particular on informal workplace learning.

Multi-location work and interaction

In multi-location work, employees work partly from home or another remote location, thus employees do not frequently work at the same premises. This fundamentally changes social interaction between knowledge workers. These interaction situations (e.g. meetings) are essential for an organisation's success and its employees' learning; they provide a forum for sharing information, solving problems, making decisions and reflecting on performance (Mroz et al. 2018). In remote interaction situations, which are key contexts where significant learning occurs (Cerasoli et al. 2018), informal and spontaneous interactions are limited (Lim 2024; Waizenegger et al. 2020).

The setting of interaction situations can vary between face-to-face, hybrid (some participants in the same room and some participating online) and fully online. Synchronous interaction occurs in real-time, with participants communicating simultaneously (e.g. video calls), while asynchronous interaction allows participants to engage at different times (e.g. emails or discussion forums) (Brady and Pradhan 2020). Hybrid and remote interactions are based on the technologies that enable them. Technical solutions have progressed significantly in recent years, providing features such as high-quality audio and video, screen sharing, voting, collaborative document editing and automatically generated memos. Although the technologies used to support interaction and the skills to use them have also evolved over the last few years, the lack of physical presence affects communication in many ways (Nesher Shoshan and Wehrt 2022). Face-to-face interaction involves unconsciously observing and interpreting the other person's body language, gestures and facial expressions (Sumner 2022). In remote interaction, the opportunity to interpret physical signals is limited thus creating risks for misinterpretations and challenges for information sharing (Nesher Shoshan and Wehrt 2022).

Remote interaction has been found to affect both the structure and content of meetings. For example, the so-called informal 'pre-meeting talk' is limited (Yoerger, Francis, and Allen 2015) when meetings are held remotely. In general, with the shift from office-based work to remote work, unplanned, spontaneous discussions decrease (Waizenegger et al. 2020), and casual conversations at the coffee machine or in the corridor are non-existent (Lin and Kwantes 2015). In remote meetings, multitasking can hinder effective communication, reduce focus and engagement and potentially lead to miscommunication and diminished collaboration (de Andrade et al. 2024). The remote work context influences interaction and communication routines, reducing daily feedback interactions (Jansson and Kangas 2025).

Workplace learning

In this study, workplace learning is approached from a socio-cultural perspective, emphasising learning as an ongoing process shaped by social interactions and contextual factors, while also recognising the active role of individual engagement and participation (see Hager 2011). Billett (2004, 2010) conceptualises workplace learning through affordances and engagement. Affordances describe the learning opportunities offered by the work environment. However, learning does not occur simply through exposure to the environment; rather, individuals decide how and to what extent they will take advantage of these opportunities and engage with them. Individuals choose to act and participate in activities in certain ways, depending on their preferences and goals. Thus, learning is understood as a process between individuals and social sources of knowledge, occurring through engagement with the physical and social environment of the workplace (Billett 2004; 2010). Furthermore, Lave and Wenger (1991) argue that learning extends beyond practices and processes to include social relationships. A successful community of practice engages its members in collective learning and sustained interaction, leading to shared practices and resources such as experiences, stories, tools and problem-solving strategies. Similarly, Eraut (2004) emphasises the social dimension of learning, highlighting the importance of participating in group activities such as teamwork, working alongside colleagues and interacting with clients.

Remote work modifies social processes, which significantly affects informal workplace learning. It may offer less rich and more restricted communication due to social and professional isolation, diminish social support and provide fewer learning cues and opportunities (Mühlenbrock et al. 2023). Reduced face-to-face interaction can hinder spontaneous coordination of tasks and knowledge sharing (Waizenegger et al. 2020), especially the transfer of tacit knowledge (Kögl and Silvius 2019). Although informal learning also takes place in digital environments (Karhapää, Hämäläinen, and Pöysä-Tarhonen 2025), remote and multi-location work has been identified as a challenge for social learning activities, such as modelling and mentoring (Zajac, Randall, and Holladay 2022).

The discussion above illustrates how informal workplace learning encompasses both social aspects and individual engagement. To capture these dimensions, Decius, Schaper, and Seifert (2019) have developed the Informal Workplace Learning Scale (IWL), which has been utilised in this study (see Table 1). In addition to the social dimension of learning (component Feedback), the scale considers the action of trying and applying one's own ideas (component Experience/action), employee self-reflection (component Reflection) and intent to learn (component Intent to learn), which involves the awareness of the need to develop one's skills and acquire more work-related knowledge. This recognises that individual interest and effort in learning may vary, as can the bases for individuals' engagement in social practices (Billett 2010).

Altogether, workplace learning in the multi-location context is shaped by the evolving nature of social interactions and emerges from the complex interplay between the learning opportunities provided by the work setting and the diverse ways in which individuals engage with them. Knowledge work requires continuous learning and development, which calls for an understanding of how to support learning practices in everyday multi-location work.

Table 1. IWL questionnaire factors and items.

Factor	Item	*M* (*SD*)
Experience/action		3.96 (0.654)
Trying and applying own ideas	E1: 'I use my own ideas to improve tasks at work'.	3.88 (0.857)
Model learning	E2: 'I look at how others work in the company to improve my work'.	4.03 (0.810)
Feedback		3.71 (0.910)
Direct feedback	F1: 'I ask my colleagues when I am not sure how well I worked'.	3.49 (1.064)
Vicarious feedback	F2: 'I ask my colleagues about the methods and tricks they use at work'.	3.94 (0.899)
Reflection		3.79 (0.810)
Anticipatory reflection	R1: 'Before starting a new task, I think about how I can do my work best'.	3.82 (0.882)
Subsequent reflection	R2: 'When I have finished a new task, I think about what I still could do better next time'.	3.76 (0.867)
Intent to learn		4.18 (0.738)
Extrinsic intent to learn	I1: 'I want to learn something new at work for myself because then I can pursue my career at the company'.	3.97 (1.075)
Intrinsic intent to learn	I2: 'I want to learn something new for myself because then I can solve problems at work faster'.	4.39 (0.704)

Methodology

Design and ethical considerations

The data collection for this study was conducted during 2022 as a part of a broader HYBRIDI-research project. At the time of data collection, there were no longer restrictions on face-to-face work in the workplace, as was the case during the peak period of the COVID-19 pandemic in 2020–2021. The data were collected from a single company in the technology sector.

Prior to the study, the Ethics Committee of the Tampere region gave a statement in approval for the study to proceed. The research followed the code of conduct for research integrity set out by the Finnish National Board on Research Integrity (TENK 2019). Prior to the start of the research, the rights, authorship principles, responsibilities and obligations of all parties (the organisation that conducted the research, principal investigator, researchers and company partners), as well as issues related to data handling and access were agreed upon.

Participants were recruited in cooperation with the company's contact persons. They sent an email to the employees informing them about the research. A briefing was organised by the researchers for employees interested in study participation. Before data collection, participants were thoroughly informed about the study and they signed an informed consent form. Participation in the study was voluntary, based on sufficient knowledge of the research project (including its phases, duration and possibility for additional questions), with the option to withdraw participation without justification at any time. The survey participants were the sole informants, providing information about themselves to the researchers. No other data, such as register data, were gathered. The data were collected, stored and processed using the software and procedures recommended by the IT services of Tampere University, the organisation that conducted the research.

Data

The data utilised in this substudy were collected from 33 knowledge workers ($n = 18$ women, 54.5%) working in a technology sector company in Finland. The technology sector was chosen due to the high prevalence of multi-locational work and its accurate reflection of knowledge work, where continuous learning and development is essential for success. The company provides services and solutions related to digital business, such as software development, data analytics, cloud solutions, artificial intelligence integration and digital strategy consulting. The company employs over 2 200 professionals and has offices in 10 countries. The data were collected in Finland, where the company employs more than 1 000 people. The study participants were on average 43.0 years old ($SD = 10.036$) and had a total work experience of 19.6 years ($SD = 9.192$). They worked hybridly with an average amount of 2.55 remote days per week ($SD = 1.660$). As the study was generally focused on knowledge workers, the study participants were from different departments. Their typical titles included data engineer, service designer, project manager and senior product designer.

This mixed method study (Creswell and Creswell 2023) combines qualitative interview and quantitative survey data. Sawchuk (2008) advocates for a multimethodological approach to studying informal learning. While survey methods are necessary and relevant, they are insufficient on their own to understand informal learning. In contrast, qualitative methods provide deeper insights and enable studying all types of learning.

Employees' experiences in face-to-face, hybrid and remote interaction situations were explored through 33 thematic interviews, which were conducted remotely via Zoom. The questions were: 'How do you perceive the setting of interaction (remote, hybrid, face-to-face) as having an impact on learning and development at work?' and 'What kind of impact does the setting have?' In addition to these questions, the interviewer probed further with clarifying questions, summaries and confirmations of correct understanding, when needed. The duration of the interviews ranged from 24 to 56 min, totalling 23 h 18 min. The audio recordings were transcribed verbatim (175 455 words) and identifying information (e.g. individual and company names and other identifiable information) were anonymised.

In a subsequent phase, the interview data were supplemented by online survey (LimeSurvey) data concerning demographic information and IWL activities of the study participants. IWL was measured using a short scale for white-collar workers (Decius et al. 2023), which consists of eight statements regarding four dimensions: experience/action, feedback, reflection and intent to learn. The questions were answered on a 5-point self-assessment scale: 1 = strongly disagree … 5 = strongly agree. Participants were asked to reflect on their work and learning at work over the past six months and to respond to the statements (Table 1).

Analysis

The interview data was analysed using ideal-type analysis (Stapley, O'Keeffe, and Midgley 2022) and by utilising the qualitative data analysis software NVivo (version 12). The ideal-type approach had been introduced by Max Weber already in 1904 (Weber 2011), but has remained relatively unknown and underused due to ambiguities in its practical use (Swedberg 2018). Theoretical foundations and clarifications were later provided by others, such as Alfred Schutz (see Psathas 2005), with more detailed methodological guidelines for ideal-type analysis by Stapley, O'Keeffe, and Midgley (2022). Ideal-type analysis has been utilised especially within sociology and psychology on topics such as parenting styles (Baumrind 1991), types of treatment dropout in adolescents receiving psychological therapy for depression (O'Keeffe et al. 2019) and the professional identities of human resource practitioners (Ferm et al. 2024).

By constructing ideal types, the different patterns of behaviour and thinking described by the participants can be illustrated and the groups can be compared with each other (Stapley, O'Keeffe, and Midgley 2022). The term ideal does not refer to what is desired or aspired to, instead, it denotes types that are pure and logically consistent forms of thought. These types emphasise the most typical and defining traits that help clarify specific aspects of empirical reality. Compared to thematic approaches, ideal-type analysis does not seek to identify specific themes in the data, but rather to identify groupings of participants (Stapley, O'Keeffe, and Midgley 2022). In this study, ideal-type analysis was chosen because the aim was not only to examine employees' perceptions, but also to compare differences between groups.

The seven steps described by Stapley, O'Keeffe, and Midgley (2022) were followed. The first step was be familiar with the data by reading through the transcripts in their entirety.

Second, each of the interviewee's narrative was reconstructed by creating a written summary of the data for each participant. This case reconstruction focused only on the sections of the interview transcripts relevant to the study aims and research question. The third step was the construction of ideal types. This reconstruction revealed four different groups according to how the employees perceived the impact of remote interaction on learning: (1) Remote interaction hinders learning, (2) interaction setting has no impact on learning, (3) remote interaction promotes learning or (4) remote interaction both hinders and promotes learning. In the fourth step, an optimal case was identified for each group of ideal types. In the fifth step, descriptions of the ideal types in each group were generated. According to the method, one case or participant should only belong to one ideal type, but elements from other cases in the group can be added to the descriptions of the optimal cases to obtain a comprehensive description of the characteristics of the ideal type (Stapley, O'Keeffe, and Midgley 2022). In the sixth step, the credibility was checked by a co-author who had not been involved in the analysis process.

The final step of the analysis was to compare the ideal types in detail. The qualitative data were combined with responses from the IWL measurement to explore the similarities and differences between the ideal types (see O'Keeffe et al. 2019), examining not only interaction and learning in multi-location work, but also assessing more broadly whether the ideal types differ from a wider perspective of informal learning. In this study, qualitative data played the main role, while quantitative data were used to support the interpretations and to further compare the ideal types constructed through an ideal-type analysis. Due to the small number of participants ($n = 33$), only descriptive examination (means and standard deviations) of IWL dimensions and items were conducted. Although the n of the quantitative data used in this study is small, the method allows for comparisons between types (see Stapley, Target, and Midgley 2017).

Findings: four ideal types

Based on the interview data, four ideal types of employees were constructed with different perceptions of the impact of remote interaction on learning and development in the work context. Each ideal type is first illustrated by a direct quotation from an optimal case. This is followed by a description and direct quotes from other interviews within the group to comprehensively describe the characteristics and experiences of that ideal type.

Ideal type 1: isolated and struggling learner

> 'People work too much on their own. And knowledge sharing is decreasing … Learning from a colleague is limited. In my opinion, the sharing of knowledge is even worse than it has been in the past'. I15

A total of 21 cases represented the type where remote interaction was experienced as a hindrance to learning and development in the work context. All but two perspectives approached learning from an informal viewpoint. Learning was seen as related to working together, which was perceived to be more challenging and even to have disappeared in multi-location work, leading to a lack of observational learning. With much of the interaction taking place remotely, it was seen as challenging to assess one's own level of competence. One's own competence might be perceived as weak compared to colleagues, which increases stress and makes it more difficult to learn new things.

Asking for advice remotely was perceived to be difficult because the applications were seen as frustrating and inefficient, and the answers can be difficult to interpret. The threshold for asking for help was perceived to be higher, as some participants felt that they were expected to already know without asking.

Informal interaction was considered important for learning. With increased remote working, interaction was perceived to have decreased, and with it, there was less spontaneous learning, knowledge exchange and sharing of tacit knowledge. Informal discussions were perceived as a means of learning new things and discovering one's own learning needs. In face-to-face encounters, it was felt that a lot of informal discussion takes place naturally between employees, and with that, unexpected bits of information is spread. In remote interaction, the questions and agenda must be prepared in advance, and interaction is more formal and slower compared to face-to-face encounters.

In remote work and interaction, the network was perceived as narrowing. Help is only sought from close colleagues one already knows well. Face-to-face work and encounters were seen as an opportunity to get to know a wider range of people.

> 'In my opinion, the development and sharing of knowledge is completely missing when it comes to remote working. And also getting to know people, and thus developing skills. Even now when I go to the office, I hear, "hey, you are doing such and such a project," … And then I get to know those people, which makes it easier for me to ask them for help in the future. Remotely, of course I can hear what projects are being done, but I do not get a face to the things and people, so it is more difficult to ask'. I4

Remotely conducted lecture-based training sessions were perceived to require more concentration and self-directedness. They were also perceived to be less memorable, as the face-to-face atmosphere and the reactions of others increased recall.

Ideal type 2: neutral learner

> 'Let me think, surprisingly difficult question. I do not know, limit, or promote, it is really difficult. Somehow, I see it as different … It is different, but I cannot find anything that immediately makes me think that remote interaction limits or promotes learning'. I11

A total of seven cases represented the type where remote interaction was experienced as having no impact on learning and development in the work context. These neutral employees stated that they did not find any difference between remote and face-to-face interaction in terms of learning and development or that they had never thought about it and had no opinion on it. Whether the interaction was face-to-face or remote, learning was seen to succeed anyway. Learning was considered different in the remote context compared to face-to-face interaction; however, the setting was seen as neutral, not hindering or promoting learning.

Ideal type 3: thriving learner

> 'Remote is better than live. It is more diverse and it offers opportunities for different things. Everyone can participate at their own pace. And then, if discussion arises, there is a place to continue it, we have Slack'. I29

A total of three cases represented the type where remote interaction was experienced as promoting learning and development in the work context. The thriving employees emphasised that remote interaction had enhanced and diversified learning through technological solutions. Independence from place and time, through the use of recordings, was seen as a major advantage, allowing more people to participate remotely. Additionally, technology-based solutions such as screen sharing, chatting on meeting platforms and further discussions on instant messaging channels were mentioned. Interviewees described that remote interaction allowed for the immediate retrieval of information during meetings, which makes working and learning more efficient. If a meeting was perceived as not adding value, this time could be used for multitasking and engaging in other activities to develop skills, instead of wasting time.

> 'I think Teams have even enhanced learning, … It is even more effective when you are looking over the lines than being in the same room and having to jump over chairs to look at something from behind someone's back. I think the learning may even have been enhanced'. I18

Ideal type 4: adaptive learner

> 'I cannot say in which one [remote or face-to-face interaction] you learn more … I guess it goes pretty much fifty-fifty. It is very much up to you. [In remote work] you are on your own, you must have the desire and motivation to learn or seek knowledge'. I27

A total of two cases represented the type where remote interaction was experienced as both promoting and hindering learning and development in the work context, depending upon, for example, the task at hand.

Adaptive employees described sharing information as easier, more efficient and faster face-to-face compared to remote interaction, for example, in mentoring and training situations. Asking for advice was also described as easier face-to-face, as remotely it requires more effort to make a video call or post a question on an instant messaging channel. Working together face-to-face was perceived as promoting learning, as more questions are asked during face-to-face interaction and thus more is learned.

Solving specific technical problems or sharing information about a particular detail, as well as working in pairs, was described as occurring at least as successfully remotely as face-to-face, thanks to technical solutions. In remote working, there is no time-consuming travel to meetings or informal discussions, and it was felt that this time could be utilised for learning and finding answers independently.

> 'As a coach or mentor, face-to-face training or knowledge sharing is much easier, more efficient and faster. That is just the way it is. You can do everything remotely, but it takes up a lot more calendar time. … But then, there are pros and cons. When you are solving a specific problem, or sharing information on a specific detail, dealing with technology, remote tools for working together are really good. So, working in pairs remotely is just as good as working face to face. Maybe even better'. I26

Remote interaction was seen as saving time spent traveling and in informal discussions, allowing more time for independent learning. Learning in the remote working context was described as requiring personal desire, motivation and self-direction.

Comparison of the ideal types

The interpretation of the interview data is deepened by comparing the different ideal types using the quantitative responses from the IWL questionnaire (Decius et al.

2023). The mean values for each item of the IWL measure were calculated in relation to four ideal types (Table 2).

While all four ideal types demonstrated high levels of motivation to learn, greater variation was observed among the ideal types within the other IWL dimensions. Based on the quantitative data, isolated and struggling learners were characterised more than others by model learning, that is observing others' work to learn (E2, $M = 4.24$, $SD = 0.625$). Remote interaction can hinder model learning by limiting the opportunity to observe others' work. This was also reflected in the interview data.

Neutral learners gave the highest ratings to the questions concerning both anticipatory reflection (R1, $M = 4.29$, $SD = 0.756$) and subsequent reflection (R2, $M = 4.14$, $SD = 1.069$). Neutral learners seemed to rely more on self-reflection in their learning than other ideal types.

Thriving learners reported the lowest average IWL scores for model learning (E2, $M = 2.67$, $SD = 0.577$). Compared to other ideal types, they also asked their colleagues less about the methods and tricks they use at work (vicarious feedback: F2, $M = 3.67$, $SD = 0.577$). The interview data suggested that asking for advice is more challenging in remote interactions, as is learning by observing others at work. Thriving learners thus do not primarily develop their skills through model learning or by asking questions of their colleagues, but instead use other approaches (e.g. reflection).

Adaptive learners reported the lowest ratings of anticipatory reflection (R1, $M = 3.00$, $SD = 0.000$) and subsequent reflection (R2, $M = 3.00$, $SD = 0.000$). They thus seem to rely less on self-reflection in their learning than other ideal types. On the other hand, adaptive learners asked for more feedback from their colleagues (direct feedback: F1, $M = 4.00$, $SD = 1.414$).

Summary of the results

The largest group, *isolated and struggling learners*, experienced remote interaction as a hindrance to learning and development in the work context. Compared to face-to-face interaction, in the remote working context, they reported a decline in model learning, knowledge sharing and asking for advice along with a narrowing network that encouraged reliance on close contacts rather than contacting those outside one's circle. Compared to other ideal types, isolated and struggling learners relied more on model learning, opportunities of which were limited, explaining this experienced hindrance on learning. A lot of development and learning were perceived by isolated and struggling learners to take place in informal work-related interaction. Thus, the reduction of spontaneous and informal discussions in remote interaction posed a significant learning challenge for them.

Neutral learners did not experience any substantial positive or negative impact of the interaction setting (remote, hybrid or face-to-face) on learning and development, even though learning was perceived to differ between the interaction settings. Compared to other ideal types, neutral learners relied more on self-reflection in their learning. Reflection can be characterised as a more socially passive activity, which does not seem to be affected by remote interaction compared to other forms of behaviour that require social activity (e.g. model learning).

Thriving learners perceived remote interaction as enhancing and diversifying their opportunities for learning and development by providing independence from time and

Table 2. Mean values of IWL items categorised by the ideal type.

		Items								
Ideal type	*n*	E1	E2	F1	F2	R1	R2	I1	I2	Total
Isolated and struggling learner, *M* (*SD*)	21	3.81 (0.873)	4.24 (0.625)	3.52 (1.078)	3.95 (0.973)	3.76 (0.944)	3.71 (0.845)	4.00 (1.183)	4.43 (0.764)	3.93 (0.567)
Neutral learner, *M* (*SD*)	7	4.00 (0.816)	4.00 (0.816)	3.29 (1.254)	4.00 (0.816)	4.29 (0.756)	4.14 (1.069)	3.86 (0.900)	4.43 (0.545)	4.00 (0.718)
Thriving learner, *M* (*SD*)	3	4.00 (1.000)	2.67 (0.577)	3.33 (0.577)	3.67 (0.577)	3.67 (0.577)	3.67 (0.577)	4.00 (1.000)	4.33 (0.577)	3.67 (0.382)
Adaptive learner, *M* (*SD*)	2	4.00 (1.414)	4.00 (1.414)	4.00 (1.414)	4.00 (1.414)	3.00 (0.000)	3.00 (0.000)	4.00 (1.414)	4.00 (1.414)	3.75 (1.061)
Total	33	3.88 (0.857)	4.03 (0.810)	3.49 (1.064)	3.94 (0.899)	3.82 (0.882)	3.76 (0.867)	3.97 (1.075)	4.39 (0.704)	

Note: E = Experience and/or action dimension, F = Feedback dimension, R = Reflection dimension, I = Intent to learn dimension.

place. They also took advantage of technology-based solutions in remote interaction. As opposed to isolated and struggling learners, thriving learners were less likely to rely on observing others' work as part of their learning, which can be limited in remote settings.

Adaptive learners described both the hindering and promoting aspects of learning in remote interaction. Solving a specific problem, sharing detailed information on a limited issue or collaborating in pairs on technical challenges were perceived to be at least as effective remotely as in face-to-face settings. In contrast, asking for advice and sharing information were perceived to be more effective face-to-face. Compared to other ideal types, adaptive learners utilised less self-reflection in their learning (which can be seen as hindering learning) and sought more feedback from colleagues (which can be seen as promoting learning).

Discussion

The aim of this study was to examine employees' perceptions of how remote interaction affects learning within the work context and to explore the differences between the groups identified by the ideal-type analysis, from a broader perspective, on informal workplace learning.

Face-to-face interaction is limited in remote and hybrid settings compared to a setting where everyone works on the same premises. This includes fewer informal discussions in remote meetings (Yoerger, Francis, and Allen 2015), fewer unplanned and spontaneous discussions overall (Lin and Kwantes 2015; Waizenegger et al. 2020), less feedback given and received (Jansson and Kangas 2025) and increased difficulty in effectively carrying out tasks that require teamwork (Whillans, Perlow, and Turek 2021). All these aspects also emerged in this study. Additionally, more specific nuances arose, such as the difficulty of assessing one's own expertise compared to that of colleagues.

Previous research has identified that a lot of informal workplace learning takes place during work-related activities and interaction situations (e.g. Kyndt and Baert 2013). Similarly, the results of the current study highlighted that remote work and interaction particularly influence informal learning rather than formal learning. Although interviews generally asked about the perceived impact of remote interaction on learning, almost all the isolated and struggling learners approached learning challenges from an informal viewpoint: informal, spontaneous encounters were perceived as crucial for learning at work. Therefore, even though informal interaction occurs partly spontaneously by simply working in the same premises, organisations should actively ensure that the premises and working culture encourage such informal encounters and conversations.

In the context of multi-location work, four different ideal types of employees were identified in relation to learning: isolated and struggling, neutral, thriving and adaptive learners. According to the results, a large proportion of employees perceived that multi-location work and the resulting reduction in face-to-face interaction made informal learning more difficult. Struggling and isolated learners had high scores in using model learning, which requires social interaction and is therefore more challenging in multi-location work. However, thriving learners found that remote interaction in multi-locational work promoted their learning, for example through the utilisation of technological solutions for interaction (see e.g. Karhapää, Hämäläinen, and Pöysä-Tarhonen 2025).

The findings of this study contribute to previous research on employees' individual differences in their perceptions of how remote interaction influences workplace learning. Opportunities for interaction exist in both remote and face-to-face work, although informal and spontaneous interactions appear to be less frequent in remote settings (Lim 2024; Waizenegger et al. 2020). However, the interaction setting was found to play a significant role in learning. In this study, engagement appeared not only as an individual characteristic but also something constructed collectively through social relationships and interactions. This indicates that the individual and social dimensions of learning are intertwined in engagement, which aligns with the idea of learning through affordances and engagement (Billett 2004; 2010). In informal learning, some aspects require social interaction, but there are also aspects that are not affected by social interaction or the lack of it, such as reflection (Decius, Schaper, and Seifert 2019). Organisations should consider how to actively support not only informal interactions, but also socially passive forms of informal learning.

Limitations and further research

The generalisability of these results is subject to certain limitations. The data for the study were collected from one company in the technology sector, specifically from knowledge workers. The participants can be assumed to have better technological skills to use digital tools related to remote interaction, compared to other sectors. On the other hand, the technology sector is characterised by a high degree of multi-location work and the need for continuous learning, which supports the appropriateness of this target population. As there were only 33 interviewees, the distribution into ideal types divides the interviewees into small groups, which limits the generalisability of the findings. Nevertheless, this does not invalidate the findings using the ideal-type analysis since similar sample sizes are considered acceptable for comparing types (see e.g. Stapley, Target, and Midgley 2017). Ideal-type analysis traditionally does not focus on forming groups based on highly detailed differences. Consequently, the limited sample size prevents statistical testing of the ideal types and their relations to IWL and background variables. Therefore, this study utilised quantitative data only to complement the qualitative data and deepen our understanding of the different types of employees.

For further research, a quantitative approach with a larger sample size would allow the examination of whether there are connections between employees' informal learning, interaction setting and background characteristics. As many organisations are currently shaping their remote work policies by restricting remote working, exploring the impact of this forced return to office on employee learning and development would be valuable from both employee and management perspectives. Additionally, studying the broader implications of limiting remote work on employees would be essential for shaping the future of work.

Conclusion

Multi-location work impacts professional learning and development of employees in various ways both at the individual and social levels. Changes in interaction can hinder or promote learning, depending on employees' learning preferences. The findings confirm that learning in multi-location work is not a uniform experience but a more complex interplay between the work setting and individual learning preferences. Furthermore, engagement with social processes and learning is not only an individual characteristic, but is also a construct of social relationships. By understanding and addressing the different learner profiles that emerged from the typology, organisations can improve learning opportunities in the multi-locational workplace. This can be done, for example, by supporting joint face-to-face working (both in terms of facilities and culture), by promoting a culture of informal interaction (in face-to-face as well as remote settings) and by encouraging active feedback-seeking behaviour.

Hybrid working and the resulting reduction in face-to-face interactions and informal discussions were generally perceived as having a negative impact on learning. In addition, employees' experiences were strongly weighted towards aspects of informal learning, and informal interaction was described as one of the key elements of learning. In conclusion, we suggest that multi-location work and the increased remote interactions that result from it can create challenges for learning and development through changes in informal interactions.

In this era of multi-location work, organisations should consciously focus on informal learning to overcome the challenges. Rather than highlighting the negative consequences of remote work and reduced face-to-face interaction, organisations should emphasise actions that support learning. Reflecting on one's own performance can be beneficial even if a significant proportion of interaction takes place remotely. Nevertheless, learning is more likely to occur through the process of interaction rather than as a reflection of the task performed (Billett 2014). Workplaces should thus ensure that when employees meet in shared premises and engage in informal interaction – which is crucial for learning and knowledge sharing (see e.g. Lim 2024) – they are supported by both the work environment and organisational practices. Workplaces should actively foster environments that enable diverse forms of learning.

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