Gruppe. Interaktion. Organisation. Zeitschrift für angewandte Organisationspsychologie
https://doi.org/10.1007/s11612-024-00755-3

HAUPTBEITRÄGE – THEMENTEIL

Paradoxes in work-related learning—and how they are perceived by practitioners

Hilko Paulsen[1] · **Timo Kortsch**[2] · **Julian Decius**[3]

Accepted: 27 July 2024

Abstract
This article in the journal "Gruppe. Interaktion. Organisation (GIO)" theoretically and empirically examines potential paradoxes in work-related learning. Organizations are full of paradoxical situations that also affect work-related learning. Based on three forms of work-related learning (i.e., formal, informal, and self-regulated learning) and three learning-relevant dimensions of organizational goal conflicts (i.e., stability vs. change, exploration vs. exploitation, and short-term vs. long-term), nine work-related learning tensions are described that can lead to paradoxical situations. Using survey data of 113 experts from the field, these tensions were evaluated according to their frequency in everyday organizational life and their perceived contradictory nature. The findings show that there are many frequently occurring but less contradictory tensions and some very contradictory but rarely occurring tensions. Implications of the results are discussed.

Keywords Paradox · Contradiction · Organizational goal conflict · Work-related learning · Formal learning · Informal learning · Self-regulated learning

Paradoxien beim arbeitsbezogenen Lernen – und wie sie in der Praxis wahrgenommen werden

Zusammenfassung
Dieser Beitrag in der Zeitschrift „Gruppe. Interaktion. Organisation (GIO)" betrachtet theoretisch und empirisch mögliche Paradoxien beim arbeitsbezogenen Lernen. Organisationen sind voller paradoxer Situationen, die auch das arbeitsbezogene Lernen betreffen. Ausgehend von drei Formen des arbeitsbezogenen Lernens (d. h. formales, informelles und selbstreguliertes Lernen) und drei lernrelevanten Dimensionen organisationaler Zielkonflikte (d. h. Stabilität vs. Veränderung, Exploration vs. Exploitation sowie kurzfristig vs. langfristig) werden neun Spannungen im arbeitsbezogenen Lernen beschrieben, die zu paradoxen Situationen führen können. Mithilfe einer Befragung von 113 Expert:innen aus der Praxis wurden diese Paradoxien nach ihrer Häufigkeit im organisationalen Alltag und ihrer wahrgenommenen Widersprüchlichkeit bewertet. Es zeigt sich, dass es viele häufig auftretende, aber geringfügig widersprüchliche Paradoxien und einige sehr widersprüchliche, aber selten auftretende Paradoxien gibt. Die Implikationen der Ergebnisse werden diskutiert.

Schlüsselwörter Paradoxie · Widerspruch · Organisationale Zielkonflikte · Arbeitsbezogenes Lernen · Formales Lernen · Informelles Lernen · Selbstreguliertes Lernen

1 Introduction

In the 21st century, organizations are exposed to changing demands from the environment such as new technologies, pace of change and changing demographics (Schaper et al. 2023). They must recognize and react to new trends, and at the same time ensure the stability of day-to-day business. The requirements of organizational units such as production, sales, HR, and research and development are different

✉ Timo Kortsch
timo.kortsch@iu.org

[1] Hannover, Deutschland

[2] IU Internationale Hochschule, Juri-Gagarin-Ring 152, 99084 Erfurt, Deutschland

[3] Organisationspsychologie, Fachbereich Wirtschaftswissenschaften, Universität Bremen, Enrique-Schmidt-Straße 1, 28359 Bremen, Deutschland

Published online: 29 August 2024

and inherently conflicting. Tensions and paradoxes arising from this can lead to consequences such as ambivalence, chaos, and conflict, that are often perceived as negative. However, paradoxes and tensions (e.g., ambidexterity, creativity and innovation, effectiveness, learning, legitimacy, and sustainability and long-term performance; Schad et al. 2016) can also have positive outcomes.

Changes and new demands require employees to acquire new knowledge, skills, abilities, and other characteristics (KSAO). Learning and development are key strategies for maintaining work capability for organizations and employability for employees (Decius et al. 2024a; Noe et al. 2014). Generally, learning is the engagement in mental processes at the individual level to gain and keep KSAO (see Kraiger and Ford 2021). More specifically, work-related learning refers to activities that enable the development of KSAO, either for a specific work task, for the job in the organization in general, or for the entire career (see Kyndt and Baert 2013). The three most prevalent forms of work-related learning are formal, informal, and self-regulated learning (Decius et al. 2024a).

Formal learning takes place in an institutionalized context such as in an educational institution or organization. Learning content, learning objectives and processes are typically structured and specified by instructors (Kyndt and Baert 2013). Formal learning ranges from short training courses (e.g., instruction on regulations) to extensive further and advanced training resulting in a higher level of education (e.g., a Master of Business Administration). Informal learning is induced by problems during the work process (Marsick and Volpe 1999) and can be best understood as a multidimensional construct that includes facets such as trying and applying own ideas, model learning, feedback, and reflection (Decius et al. 2023a). Self-regulated learning is more autonomous as learners set their own learning goals, monitor the learning progress, and regulate actions within the learning process (Endedijk and Cuyvers 2022; Sitzmann and Ely 2011). Compared to formal and informal learning, self-regulated learning requires an enhanced level of motivational and volitional resources to suppress distractions and sticking to own learning goals, because neither a teacher nor an immediate situational demand ensures this (Decius and Decius 2022). The three forms of learning—formal, informal and self-regulated—can be conceptually distinguished, but in practice they may overlap. Coaching, for example, can be seen as a hybrid of self-regulated and formal learning, as the coach formally guides the coachee, but the coachee determines the learning objectives, and consequently the responsibility for the learning process is shared (Kortsch et al. 2024).

Work-related learning is of immense importance for organizations and employees, but it is not always straightforward. Like other job-related activities, it is also subject to the conditions of the organization. The aim of this conceptual article is to build on the work of Schad et al. (2016) on tensions and paradoxes and draw from the prototypical forms of work-related learning to describe tensions as potential paradoxes of learning in more detail, illustrate them with examples from practice, and explain them based on psychological models and theories. This theoretical discussion is further enriched by an empirical perspective: we report initial findings from a subject matter expert survey among HR practitioners and discuss their implications.

2 Paradoxes and tensions

Paradoxes are a common phenomenon that is well known and has often been described in management literature (e.g., Putnam et al. 2016; Schad et al. 2016; Smith and Lewis 2011). Schad et al. (2016, p. 10) defined paradox as "persistent contradiction between interdependent elements", highlighting that there are two key characteristics: contradiction and interdependence. *Tension* is a broader term used in the literature, which primarily refers to the subjective experience of such phenomena in organizations (Putnam et al. 2016). Accordingly, paradoxes are always contradictions and fall under the umbrella term of tensions. However, not every tension or contradiction is also a paradox.

According to Smith and Lewis (2011), organizational paradoxes can be distinguished into four categories: belonging, learning, organizing, and performing. The present article focuses on the learning category. Despite a general tension between learning and performance (see also Miron-Spektor et al. 2018), Schad et al. (2016) identified three tensions that can result in learning paradoxes: exploration vs. exploitation, stability vs. change, and short-term vs. long-term. However, it is still unclear what this means for specific forms of work-related learning. We argue that there are inherent paradoxes for the three learning forms (i.e., formal, informal, and self-regulated learning). In the following, we describe the three learning-related tensions proposed by Schad et al. (2016). We underpin them with psychological models and theories such as the Rubicon model of action phases (Heckhausen and Gollwitzer 1987; Gollwitzer 2012), conversations of resource theory (Hobfoll et al. 2018), or construal level theory (Trope and Liberman 2003; Wiesenfeld et al. 2017).

2.1 Tension of exploration vs. exploitation

According to Marsh (1991, p. 71), "exploration includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation. Exploitation includes such things as refinement, choice, production, efficiency, selection, implementation,

execution." Both exploration and exploitation include learning activities, but they differ in their quality: exploration is about learning new things; exploitation is about learning how things can be optimized (Gupta et al. 2006). At the individual level, we can distinguish between motivational and volitional aspects concerning the exploration vs. exploitation tension, which is shaped in the Rubicon model of action phases (Heckhausen and Gollwitzer 1987). Exploration refers to the motivational pre-decisional and post-actional model phases in which an individual considers their options and reflects on the choice made (e.g., searching for und evaluating training course offers). In contrast, exploitation refers to the volitional pre-actional and actional model phase in which the individual aims to get things done efficiently and therefore are more motivated to realize goals than select goals (e.g., preparing for and completing a specific training course).

2.2 Tension of stability vs. change

A fundamental tension arises between stability and change, playing a pivotal at various levels in organizations. Stability preserves existing structures, yet change is imperative for adaptation and growth. Overemphasizing stability risks stagnation, while excessive change undermines established foundations. Striking a balance is paramount; only through adaptation can stability be sustained amidst evolving environments (Farjoun 2010; Weick and Quinn 1999). According to conservation of resources (COR) theory (Hobfoll et al. 2018), organizations, teams, and individuals strive to retain, protect, and build resources; the potential or actual loss of resources is threatening. In rapidly changing environments, there is a trade-off between investing in the protection of existing resources and building up new resources. For instance, employees grapple with updating existing KSAO or acquiring new KSAO, particularly amid digitalization and AI trends (Decius 2024; Holmes and Littlejohn 2024).

2.3 Tension of short-term vs. long-term perspectives

A third dimension of tension arises from a temporal perspective. Construal level theory assumes that construal level (i.e., the degree of mental abstraction) corresponds to psychological distance that in turn is increased by temporal, spatial, or social distance (Trope and Liberman 2003; Wiesenfeld et al. 2017). In contrast to short-term events, long-term events are not only temporally distal, but also psychologically distal with consequences for mental abstraction. Employees plan, for instance, their next working week on a more concrete and lower construal level (e.g., in terms of events and actions) than the next ten years in their job, which they image more abstract on a higher construal level (e.g., career goals). With regard to work-related learning, employees are confronted with concrete short-term learning needs (e.g., learning how to build a working alliance with a new specific project partner in a meeting tomorrow) as well as more abstract learning needs in the long term (e.g., learning how to create strategic alliances with new project partners over the next few years).

3 Work-related learning tensions

The following section will show how the general tensions described above specifically can affect the three forms of work-related learning and may lead to paradoxical situations. We apply Schad et al.'s (2016) three general learning-related tensions—exploration vs. exploitation, stability vs. change, and short- vs. long-term—to the three work-related forms of learning (i.e., formal, informal, and self-regulated learning), describing a total of nine tensions, that can be perceived as contradictory and potential paradoxes.

3.1 Formal learning tensions

Three tensions in formal learning are described below, structured along the dimensions of exploration–exploitation ("*Train basic behaviors in a general way vs. train specific behaviors intensively*"), stability–change ("*Developing your own staff for your own organization through training vs. not making your own staff too attractive for other organizations through training*"), and short term–long term ("*Always satisfy training participants vs. always ensure learning success through training*").

3.1.1 Train basic behaviors in a general way vs. train specific behaviors intensively (breadth of content vs. depth of content; FL1)

In formal learning, successful achievement of KSAO is not sufficient. KSAO must be maintained and generalized (Baldwin and Ford 1988). Prior research has shown a gap between training and transfer (Blume et al. 2010). Besides creating a transfer-supporting work-environment by the organization (Mehner and Kauffeld 2023), the design of trainings by practitioners such as trainers (Wißhak 2022) can provide an approach to close this gap. Because only a limited amount of time is available, this can be perceived as a contradiction by the actors involved (e.g., trainers). On the one hand, they must train specific behaviors so that employees can learn and apply them, enabling exploitation. On the other hand, training content must not be too specific, and KSAO to be trained must be broad, generalizable, and adaptive, enabling exploration. In terms of the Rubi-

con model (Heckhausen and Gollwitzer 1987), the question arises whether trainers train how to select goals and reflect goal attainment or whether trainers focus on planning and implementation of pre-defined behaviors. However, if trainers pursue one of these goals in a training, this is at the expense of the other goal. This is consistent with the fact that limited resources can increase tensions because multiple goals cannot be pursued equally well (Schad et al. 2016).

3.1.2 Developing your own staff for your own organization through training vs. not making your own staff too attractive for other organizations through training (FL2)

Development opportunities are seen as part of employees' psychological contract (i.e. "an individual's belief regarding the terms and conditions of a reciprocal exchange agreement" with the employer; Robinson and Rousseau 1994, p. 246) and should contribute to retention. In terms of Schad et al.'s (2016) learning-related tension stability vs. change, the development through formal training represents a change that leads to stability through retention. However, this change may be also a threat for organizational stability.

Investing in employees' development through time-consuming and expensive training can not only develop employees' competencies, but may also foster their employability, which in principle is a desirable effect. The risk may be that formal learning leads to employees leaving in the long run, due to higher employability and external market value. For this reason, some organizations avoid offering further training. This tension has been described as the employability management paradox (De Cuyper and De Witte 2011; van Harten et al. 2020). However, there is no empirical evidence to support this rationale (van Harten et al. 2020; for an overview, see Fugate et al. 2021). Van Harten et al. (2020) therefore concluded that "the employability management paradox is not a given" (p. 1099).

Empirical evidence does not prevent decision-makers in organizations from interpreting the situation differently: they may fear a net loss of resource investment, therefore experience tension and are reluctant to offer training. Ironically, this can lead to employees leaving the company and decision-makers seeing their assumptions confirmed. This is in line with the assumption that paradoxes are at least partly socially constructed (Smith and Lewis 2011).

3.1.3 Always satisfy training participants vs. always ensure learning success through training (FL3)

Although it is assumed that HRD managers know the difference between short-term goals such as satisfaction and long-term goals such as learning and application of training content, they often rely on "happy sheets" for training evaluation (Kauffeld 2016). Empirically, satisfaction with learning events does not necessarily lead to learning (Alliger et al. 1997). Learning involves a substantial personal effort for participants (Kraiger and Ford 2021). Thus, high-quality training often requires cognitive effort and may be perceived as exhausting (Paas et al. 2010). This can reduce participants' satisfaction, with the consequence that HR departments must justify their decision for the training and external trainers are no longer commissioned (Kauffeld 2016). This means that there are incentives in HR development that ironically lead to satisfaction as a short-term goal at the expense of learning. In the worst-case scenario, a vicious circle is created in which formal learning primarily serves to satisfy and entertain (Phillips and Phillips 2016). In line with this, a recent study showed that trainers did feel more responsible for short-term than for long-term training outcomes (Barth and Wißhak 2023). According to construal level theory (Trope and Liberman 2003; Wiesenfeld et al. 2017), trainers' psychological proximity to training and training group result in a lower construal level focusing on concrete and narrow constructs (e.g., room selection, seating arrangements, equipment, design of materials) and disregard more abstract and broad aspect (e.g., motivation to transfer, peer and supervisor support, opportunities to apply). This provides a possible explanation for the satisfaction-learning success paradox.

3.2 Informal learning tensions

Three tensions in informal learning are described below, structured along the dimensions of exploration–exploitation ("*Leave informal learning untouched and thus truly 'informal' vs. structure informal learning and thus 'formalize' it*"), stability–change ("*Motivate experimentation, because mistakes are seen as a source of learning vs. discourage experimentation, because mistakes cause additional effort*"), and short term–long term ("*Focus on less complex, short-term solutions to problems vs. focus on more complex, long-term solutions to problems*").

3.2.1 Leave informal learning untouched and thus truly "informal" vs. structure informal learning and thus "formalize" it (IL1)

According to the octagon model, informal learning is characterized by a combination of cognitive and behavioral learning activities that can be intrinsically or extrinsically motivated (Decius et al. 2019, 2024b; Tannenbaum and Wolfson 2022). These include personal experimentation, model learning, feedback seeking, and reflection. The advantage of informal learning is that employees always engage in it when it is needed, for instance, when challenges

arise in the work process. This removes the transfer hurdle inherent in formal learning, as the application of acquired KSAO is integrated into the work process (Decius 2024; Tannenbaum and Wolfson 2022). An important premise for employees' informal learning is job control and autonomy (Cerasoli et al. 2018; Decius et al. 2023b), such as the availability of colleagues to ask questions, time to reflect, and the supervisor's permission for experimentation, as well as participation in corporate decision-making (Graßmann and Decius 2023).

Informal learning is responsible for most work-related learning (Cerasoli et al. 2018; Tannenbaum and Wolfson 2022) and is linked to desired outcomes such as KSAO development, performance, and satisfaction (Cerasoli et al. 2018; Decius et al. 2021; Smet et al. 2022). Thus, although informal learning occurs more or less automatically during work, HR managers sometimes feel urged to promote it (others, such as Gnahs 2016, refer more critically to an "economic monetization of informal learning"; see Decius 2020, for an overview). Understandable reasons may be to secure sovereignty and control over the achievement of positive learning outcomes and to avoid negative consequences of informal learning, which can occur, for example, when employees adopt unauthorized shortcuts from their colleagues (Cerasoli et al. 2018; Decius 2020; Tannenbaum and Wolfson 2022).

Informal learning can refer both to exploration and exploitation at the individual level. Because of its benefits, decision makers in organization try to use informal learning to achieve specified goals at the organizational level. For instance, assuming that informal learning has many advantages, it may be decided that this form of learning should be exploited. Then, it is no longer a question of exploring which occasions informal learning is suitable for, but that it is used for certain learning occasions. This can create a tension, as well-intentioned interventions can also have detrimental effects. Boud et al. (2009), for example, reported that managers in a public sector agency had observed that a significant proportion of work-related information was exchanged between employees during informal lunch meetings. Based on this insight, they decided to formalize informal learning. However, employees did not appreciate the formally planned and mandatory tea and coffee rounds that were introduced as a result. They even tended to refrain from informal learning, which can be described as a paradox of informal learning. In terms of the Rubicon model of action phases (Heckhausen and Gollwitzer 1987), the agency in the pre-decision phase no longer remains with the individual but is predetermined by the organization.

3.2.2 Motivate experimentation, because mistakes are seen as a source of learning vs. discourage experimentation, because mistakes cause additional effort (IL2)

In agile work approaches, experimentation such as by prototyping and testing new solutions, is a strategy to learn and develop (e.g., Petermann and Zacher 2021; Kortsch et al. 2024). They call for seeking errors through experimentation ("fail fast, learn fast" mindset, see Koporic et al. 2024). This may be fostered by supporting supervisors as research has shown a positive association between transformational leadership and informal learning (Zia et al. 2022). From an error management perspective, errors are unavoidable and potentially harmful, but may also be beneficial. However, mistakes and errors are often seen as detrimental, which is why learning is also aimed at avoiding them (Frese and Keith 2015). Drawing on COR theory (Hobfoll et al. 2018), errors can threaten resources and employees are therefore motivated to avoid them. Preventing errors help to ensure stability and preserve resources.

Although often assumed, negative emotions that arise from errors are not per se detrimental to learning from errors (Rausch et al. 2017; Zhao 2011). Furthermore, errors and deviations from traditional processes are also seen as learning opportunities (e.g., Harteis et al. 2008) and drivers of innovation (Frese and Keith 2015). In everyday working life, however, errors can represent both a great opportunity and a great risk. This results in an area of tension. Should organizations encourage or discourage their employees to experiment? A positive error culture, which considers errors a source of learning and a trigger for further development, is regarded both conceptually and empirically as a predictor of informal workplace learning (Decius et al. 2021; Tannenbaum and Wolfson 2022).

3.2.3 Focus on less complex, short-term solutions to problems vs. focus on more complex, long-term solutions to problems (IL3)

Employees learn informally for the primary reason of solving work-related problems (Decius 2020; Kortsch et al. 2024). The learner is therefore not initially concerned with achieving sustainable learning outcomes in the long-term, but with carrying on working in the short-term (Decius and Decius 2022). This can lead to learning being discontinued once a goal has been sufficiently achieved, unless the result of a metacognitive assessment of the learning process is a trigger for a further run of the informal learning cycle (Decius et al. 2024b). Sometimes, however, this approach does not provide a long-term solution to the problem—research then refers to surface learning in contrast to more sustainable deep learning (Kirby et al. 2003). Instead

of reaching the "development stance" ("Get the task done really well *and* use it as a springboard [for] the future"), the learner remains at the "performance stance" ("Get the task done really well"), or even only at the "completion stance" ("Get the task done adequately [...] but with modest investment", Perkins et al. 2013, p. 2). Learners may also apply quick workarounds that solve the problem but cause new problems in the future, such as the short-term effective circumvention of safety regulations that increases the risk of a serious accident (Cerasoli et al. 2018; Tannenbaum and Wolfson 2022).

In terms of construal level theory (Trope and Liberman 2003; Wiesenfeld et al. 2017), psychological proximity to the problem leads to a lower construct level. Although this helps to find quick and suitable solutions for specific problems, it can hinder the generalization that is necessary for sustainable long-term solutions.

3.3 Self-regulated learning tensions

Three tensions in self-regulated learning are described below, structured along the dimensions of exploration–exploitation ("*Promote self-regulated learning by offering a wide range of content vs. not overburdening employees by offering a selective range of content*"), stability–change ("*Maintain existing job-related knowledge by yourself vs. build up new job-related knowledge by yourself*"), and short term–long term ("*Use incentives (e.g., gamification) to motivate self-regulated learning in the short term vs. ensure long-term learning success through in-depth engagement with the content*").

3.3.1 Promoting self-regulated learning by offering a wide range of content vs. not overburdening employees by offering a selective range of content (SL1)

Self-regulated learning is receiving a boost from a digitalized working world (Endedijk and Cuyvers 2022). It has never been so easy to access and explore new information. Employees use their smartphones for learning (Kortsch et al. 2019) and providers of learning libraries (e.g., LinkedIn-Learning, Masterplan) make knowledge resources easily accessible. However, the seemingly endless opportunities may overwhelm employees to choose the right offer and make use of it. An oversupply of specific learning options increases ineffective cognitive load (Paas et al. 2010) and lead to self-regulation challenges: this is like an overly extensive menu in a restaurant—it is hard to choose. In terms of the Rubicon model (Heckhausen and Gollwitzer 1987), the employee spends a lot of time in the pre-decisional phase and thus in a deliberate rather than an implemental mindset (see Gollwitzer 2012). Self-regulation is required for the change of mindset.

Endless opportunities may initially seem appealing to the learner but have paradoxical effects. On the one hand, these offers can facilitate self-regulated learning, but on the other hand, there is a risk that the learning options will not be used over time because the employee is constantly oscillating between possible alternatives to explore new options. In other words, nothing is done or exploited. This raises the question how much self-regulation HR developers should leave to learners, resulting in a dilemma: Either learners are externally determined by pre-selected content, or they are overwhelmed by the choice of learning offers (see Bergamin and Hirt 2018).

3.3.2 Maintain existing job-related knowledge by yourself vs. build up new job-related knowledge by yourself (SL2)

Change means that knowledge and information are constantly in flux and evolving. Digitalization, for example, has led to an exponential growth in available knowledge (Hilbert and López 2011). Scholars therefore assumed that the "half-life of knowledge" is constantly decreasing, meaning that knowledge is becoming outdated faster and faster (Knudsen and Lien 2023; see also Helmrich and Leppelmeier 2020, for a critical review of this assumption). Keeping up with the latest developments means constantly learning and updating one's knowledge, for instance, in a self-regulated way. Job requirements sometimes necessitate new KSAO without which certain work activities cannot be carried out. In line with COR theory (Hobfoll et al. 2018), research has shown that self-regulated learning can be a way to contribute to the conservation of resources in terms of employability through developing job-relevant knowledge (Decius et al. 2024a; also see Houben et al. 2021). Scholars also emphasized the need to adapt to change, to be open to new perspectives and new knowledge to develop personally and professionally (Decius et al. 2022; Endedijk and Cuyvers 2022; Schaper et al. 2023), which can be summarized as the meta-competence "learning to learn" (see Decius 2020).

3.3.3 Use incentives such as gamification to motivate self-regulated learning in the short-term vs. ensure long-term learning success through in-depth engagement with the content (SL3)

For many organizations, supporting engagement in self-regulated learning activities is an important goal. Case examples illustrate that self-regulated learning is not a self-runner (Kortsch et al. 2024). Organizations often set incentives to enhance motivation, such as bonus systems, or include playful elements (see also the concept of playful work design, Bakker et al. 2020). A common example of these learning

design mechanisms is gamification. Gamification refers to "the use of game design elements in non-game contexts" (Deterding et al. 2011, p. 9), such as learning and development contexts. Gamification comprises a broad set of game design elements that vary in granularity, can be combined (e.g., collecting points or badges, collaboration, competition, or usage of narrative for serious games), and have proven to promote learning in various contexts (Sailer and Homner 2020). However, there is a risk that performance incentives created by gamification ultimately become an end on their own. The learning content may fade into the background if employees quickly click through learning tasks and possibly cheat on quiz questions.

In terms of construal level theory (Trope and Liberman 2003; Wiesenfeld et al. 2017), the use of game design elements reduces psychological distance (e.g., immediate gratification, a detailed and vivid story of serious games, concrete co-players or opponents) and thus facilitates short-term action. However, this distance can also distract from more abstract long-term goals (e.g., learning for later use in workplace).

4 Empirical investigation of the paradoxes presented

We conducted an empirical subject matter expert survey to find out to what extent the nine aforementioned tensions of work-related learning are prevalent in practice and whether practitioners perceive them as tensions at all. The study methods and findings are presented below.

4.1 Methods

The final sample consisted of 113 participants who dealt professionally with HR issues, acquired through personal contacts and networks of the authors in March 2024. 30.01% of the respondents were female. The average age was 44.26 years ($SD = 12.43$). Participants indicated that they had the following organizational functions (multiple answers were possible): Personnel development 62.83%, organizational development 32.74%, personnel selection 30.09%, training 28.32%, internal consulting 21.24%, personnel administration 16.81%, HR business partner 15.04%, external consulting 14.16%, recruiting 12.39%,

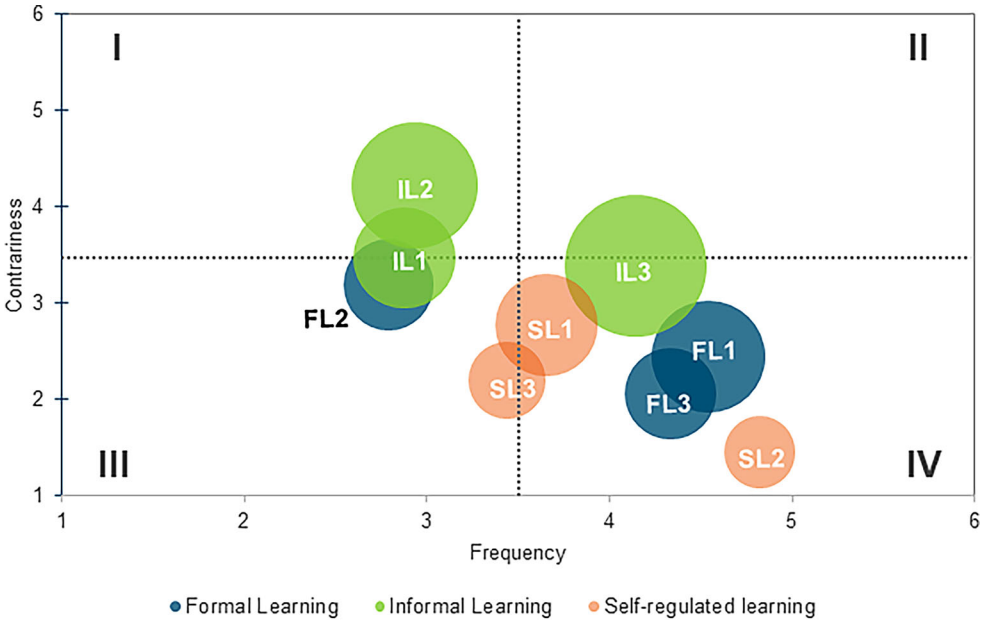

Fig. 1 Results of the subject matter expert survey on the frequency and contrariness of the nine work-related learning paradoxes. (The center of each circle marks the mean values for the two criteria examined; the circle size is the product of the two values. Response scales range from 1 = *never* to 6 = *always* for frequency and from 1 = *not contradictory at all* to 6 = *completely contradictory* for contrariness)

FL1: Train basic behaviors in a general way vs. train specific behaviors intensively (breadth of content vs. depth of content)
FL2: Developing your own staff for your own organization through training vs. not making your own staff too attractive for other organizations through training
FL3: Always satisfy training participants vs. always ensure learning success through training
IL1: Leave informal learning untouched and thus truly "informal" vs. structure informal learning and thus "formalize" it
IL2: Motivate experimentation, because mistakes are seen as a source of learning vs. discourage experimentation, because mistakes cause additional effort
IL3: Focus on less complex, short-term solutions to problems vs. focus on more complex, long-term solutions to problems
SL1: Promoting self-regulated learning by offering a wide range of content vs. not overburdening employees with a selective range of content
SL2: Maintain existing job-related knowledge independently vs. build up new job-related knowledge independently
SL3: Use incentives such as gamification to motivate independent learning in the short term vs. ensure long-term learning success through in-depth engagement with the content

and other 14.16% (e.g., quality management). Respondents had an average of 14.78 years of professional experience in HR ($SD = 11.04$). One third (33.63%) worked in organizations with up to 500 employees, almost one third (28.32%) in organizations with 500 to 5000 employees, and the rest (38.10%) in organizations with more than 5000 employees. The most frequently mentioned industries were service management (28.32%), public administration (23.01%), as well as manufacturing and processing industry/agricultural sector (21.34%).

We presented the nine tensions to the respondents as a pair of statements (e.g., "A: Developing your own staff for your own organization through training; B: Not making your own staff too attractive for other organizations through training") and asked them to rate the following two items for each pair of statements on a six-point Likert scale: "1. How often must both goals be pursued simultaneously in your organization?" (1 = *never* to 6 = *always*); "2. From my point of view, the two objectives are ..." (1 = *not contradictory at all* to 6 = *completely contradictory*).

4.2 Results

The findings of the expert survey on the frequency and contrariness of the nine work-related learning tensions are shown in Fig. 1. The diameter of the circles is proportional to the product value of frequency and contrariness as we assume that the product illustrates the practical relevance.

A descriptive examination revealed that the ratings of the tensions are primarily located in the fourth quadrant (i.e., bottom right) of the coordinate system with frequency on the x-axis and contrariness on the y-axis. This means that most paradoxes were perceived as frequent but little contradictory. We used one-sample t-tests to calculate whether the mean values of each paradox differed significantly from the Likert scale midpoint (3.5) in terms of frequency and contrariness. Regarding *frequency*, t-tests showed that paradoxes FL2, IL1, and IL2 were perceived significantly less frequent than the scale midpoint ($p < 0.01$), whereas FL1, FL3, SL2, and IL3 were perceived significantly more frequently ($p < 0.001$). SL1 and SL3 did not differ significantly from the midpoint ($p > 0.05$). Regarding *contrariness*, t-tests showed that IL2 was perceived significantly more contradictory ($p < 0.001$), whereas FL1, FL3, SL1, SL2, and SL3 were perceived significantly less contradictory ($p < 0.001$) than the scale midpoint. FL2, IL1, and IL2 did not differ significantly from the midpoint ($p > 0.05$). From a practitioner's perspective, our findings suggest that one could initially focus on the relatively frequently perceived paradoxes (FL1, FL3, SL2, and IL3) and the paradox perceived as particularly contradictory (IL2).

5 Conclusion

This article examined first theoretically and then empirically how paradoxes in organizations affect work-related learning. It extends the literature on learning-related paradoxes in organizations by Schad et al. (2016) by expanding and concretizing three work-related dimensions of tension (i.e., stability vs. change, exploration vs. exploitation, and short-term vs. long-term) in relation to three typical forms of work-related learning (i.e., formal, informal, and self-regulated learning). The conceptual approach is supplemented by an assessment from HR practitioners. As paradoxes are both inherent to the system and socially constructed (Smith and Lewis 2011), the actors' perceptions provide insight into whether tensions are perceived as contradictory or not.

The empirical findings of this pilot study indicate that practitioners do not perceive many of the conceptually described paradoxes as being as contradictory as the term paradox suggests. Only one paradox (IL2: "Motivate experimentation, because mistakes are seen as a source of learning vs. discourage experimentation, because mistakes cause additional effort") was rated above the scale midpoint regarding contrariness. This is in line with other work on paradoxes in general, as Miron-Spektor et al. (2018) stated that the perspective on paradoxes is the problem, not the paradoxes themselves. Furthermore, our study suggests that paradoxes, even when seen as highly contradictory, tend to be rare. A statement from one study participant in an additional free response box seems to illustrate well the reality of dealing with these theoretical paradoxes: "I don't find many things contradictory, because it always depends on the type of problem you want to solve." Thus, paradoxes become specific demands in the work context, which then no longer have to be paradoxical. The apparent incompatibility could be resolved by looking at concrete situations in practice. This also becomes evident in another statement from a participant: "With regard to the balance between a broad and maximally informal learning offering and the avoidance of excessive demands, I think learning influencers and the curation of relevant content are playing an increasingly important role." Thus, in practice, (supposed) paradoxes are obviously tackled in a pragmatic way. Future research could crossvalidate these preliminary insights by examining potential differences across industries and company sizes, for example.

Some recommendations can be derived conceptual considerations. The three work-related learning forms (i.e., formal, informal, and self-regulated learning) may be combined to maximize benefits and minimize costs of work-related learning (see Decius et al. 2022; Kortsch et al. 2024). For instance, training in meta-competencies (e.g., learning to learn, error management) may be fruitful to increase the

likelihood of informal learning (see paradox IL1) or experimentation (see paradox IL2). Meta-competencies may also support switching between informal and self-regulated learning activities (see paradox IL3) and help to reduce tensions related to the paradoxes FL1 as well as SL1 or SL2. To address paradox F3, abstract und distal goals at a higher construal level (Trope and Liberman 2003; Wiesenfeld et al. 2017) such as ensuring transfer of training may be combined with concrete and specific tools at a lower construct level (e.g. short practicable methods to evaluate training design and transfer). In addition to person-centered approaches, self-regulation in learning may also be facilitated through psychological empowerment by changing situations (e.g., work or learning design; see Decius et al. 2022) as well as broader context (e.g., learning culture; see Kortsch and Kauffeld 2019; Kortsch et al. 2024).

In conclusion, it can be said that the topic of work-related paradoxes and tensions has so far mainly been considered theoretically and abstractly in research. This paper has contributed to prior literature by adding a concrete context and looking at the three most prevalent forms of work-related learning. The preliminary findings from the subject matter expert survey presented here also showed that empirical research on these paradoxes and tensions can reveal new findings and at least partially calls into question the contradictory nature of paradoxes assumed by definition and in theory. It seems that paradoxes may be paradoxical in theory, but often manifest themselves in work-related problems that can be solved.

Funding Open Access funding enabled and organized by Projekt DEAL.

References

Alliger, G. M., Tannenbaum, S. I., Bennett Jr., W., Traver, H., & Shotland, A. (1997). A meta-analysis of the relations among training criteria. *Personnel psychology, 50*(2), 341–358. https://doi.org/10.1111/j.1744-6570.1997.tb00911.x.

Bakker, A. B., Hetland, J., Olsen, O. K., Espevik, R., & De Vries, J. D. (2020). Job crafting and playful work design: Links with performance during busy and quiet days. *Journal of Vocational Behavior*, *122*, 103478. https://doi.org/10.1016/j.jvb.2020.103478.

Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: a review and directions for future research. *Personnel Psychology*, *41*(1), 63–105. https://doi.org/10.1111/j.1744-6570.1988.tb00632.x.

Barth, D., & Wißhak, S. (2023). Die wahrgenommene Verantwortung von Trainer/innen für kurzfristige und langfristige Trainingsergebnisse [The perceived responsibility of trainers for short-term and long-term training results]. *Gruppe. Interaktion. Organisation. Zeitschrift für Angewandte Organisationspsychologie (GIO)*, *54*, 361–370. https://doi.org/10.1007/s11612-023-00704-6.

Bergamin, P., & Hirt, F. S. (2018). Who's in charge?—dealing with the self-regulation dilemma in digital learning environments. In K. North, R. Maier & O. O. Haas (Eds.), *Knowledge management in digital change* (pp. 227–245). Springer. https://doi.org/10.1007/978-3-319-73546-7_14.

Blume, B. D., Ford, J. K., Baldwin, T. T., & Huang, J. L. (2010). Transfer of training: a meta-analytic review. *Journal of Management*, *36*(4), 1065–1105. https://doi.org/10.1177/01492063093528.

Boud, D., Rooney, D., & Solomon, N. (2009). Talking up learning at work: cautionary tales in co-opting everyday learning. *International Journal of Lifelong Education*, *28*(3), 323–334. https://doi.org/10.1080/02601370902799077.

Cerasoli, C. P., Alliger, G. M., Donsbach, J. S., Mathieu, J. E., Tannenbaum, S. I., & Orvis, K. A. (2018). Antecedents and outcomes of informal learning behaviors: A meta-analysis. *Journal of Business and Psychology*, *33*(2), 203–230. https://doi.org/10.1007/s10869-017-9492-y.

De Cuyper, N., & De Witte, H. (2011). The management paradox: self-rated employability and organizational commitment and performance. *Personnel Review*, *40*(2), 152–172. https://doi.org/10.1108/00483481111106057.

Decius, J. (2020). *Informelles Lernen im Kontext industrieller Arbeit [Informal learning within the context of industrial work: Conceptualization, operationalization, antecedents, and learning outcomes]ntecedents, and learning outcomes*. Paderborn: University. https://doi.org/10.17619/UNIPB/1-1072.

Decius, J. (2024). Das Potenzial des informellen Lernens am Arbeitsplatz: Ein Überblick zum Status Quo und eine Forschungsagenda [The potential of informal workplace learning: An overview of the status quo and a research agenda]. *Psychologische Rundschau*. https://doi.org/10.1026/0033-3042/a000686.

Decius, J., & Decius, L. (2022). Sovereign workplace learning: a process model to integrate self-regulated and informal learning. *Academy of Management Proceedings*, *2022*(1), 14907. https://doi.org/10.5465/AMBPP.2022.14907abstract.

Decius, J., Schaper, N., & Seifert, A. (2019). Informal workplace learning: development and validation of a measure. *Human Resource Development Quarterly*, *30*(4), 495–535. https://doi.org/10.1002/hrdq.21368.

Decius, J., Schaper, N., & Seifert, A. (2021). Work characteristics or workers' characteristics? An input-process-output perspective on informal workplace learning of blue-collar workers. *Vocations and Learning*, *14*(2), 285–326. https://doi.org/10.1007/s12186-021-09265-5.

Decius, J., Kortsch, T., Paulsen, H., & Schmitz, A. (2022). Learning what you really, really want: towards a conceptual framework of new learning in the digital work environment. In HICSS (Ed.), *Proceedings of the 55th Hawaii International Conference on System Sciences* (pp. 5231–5240).

Decius, J., Knappstein, M., Schaper, N., & Seifert, A. (2023a). Investigating the multidimensionality of informal learning: validation of a short measure for white-collar workers. *Human Resource Development Quarterly*, *34*(1), 45–74. https://doi.org/10.1002/hrdq.21461.

Decius, J., Schaper, N., Klug, K., & Seifert, A. (2023b). Active learning, active shaping, or both? A cross-lagged panel analysis of

reciprocal effects between work design and informal workplace learning, and the mediating role of job crafting. *Journal of Vocational Behavior*. https://doi.org/10.1016/j.jvb.2023.103893.

Decius, J., Knappstein, M., & Klug, K. (2024a). Which way of learning benefits your career? The role of different forms of work-related learning for different types of perceived employability. *European Journal of Work and Organizational Psychology*, *33*(1), 24–39. https://doi.org/10.1080/1359432X.2023.2191846.

Decius, J., Decius, L., & Beausaert, S. (2024b). Integrating multiple theoretical perspectives on informal field-based learning: the self-regulated informal learning cycle (SILC). Unpublished Manuscript. *Human Resource Development Review*.

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: defining "gamification". In A. Lugmayr (Ed.), *Proceedings of the 15th International Academic Mindtrek Conference: Envisioning Future Media Environments* (pp. 9–15). New York: ACM. https://doi.org/10.1145/2181037.2181040.

Endedijk, M. D., & Cuyvers, K. (2022). Self-regulation of professional learning: towards a new era of research. In C. Harteis, D. Gijbels, & E. Kyndt (Eds.), *Research Approaches on Workplace Learning: Insights from a Growing Field* (pp. 219–237). Springer. https://doi.org/10.1007/978-3-030-89582-2_10.

Farjoun, M. (2010). Beyond dualism: stability and change as a duality. *Academy of Management Review*, *35*(2), 202–225. https://doi.org/10.5465/amr.2010.48463331.

Frese, M., & Keith, N. (2015). Action errors, error management, and learning in organizations. *Annual Review of Psychology*, *66*, 661–687. https://doi.org/10.1146/annurev-psych-010814-015205.

Fugate, M., Van der Heijden, B., De Vos, A., Forrier, A., & De Cuyper, N. (2021). Is what's past prologue? A review and agenda for contemporary employability research. *Academy of Management Annals*, *15*(1), 266–298. https://doi.org/10.5465/annals.2018.0171.

Gnahs, D. (2016). Informelles Lernen in der Erwachsenenbildung/Weiterbildung. In *Springer eBooks* (pp. 107–122). https://doi.org/10.1007/978-3-658-05953-8_8.

Gollwitzer, P. M. (2012). Mindset theory of action phases. In P. A. M. Van Lange, A. W. Kruglanski & E. T. Higgins (Eds.), *Handbook of Theories of Social Psychology* (Vol. 1, pp. 526–545). SAGE. https://doi.org/10.4135/9781446249215.n26.

Graßmann, C., & Decius, J. (2023). Self-development in the twenty-first century: An exploratory analysis of the relationship between new work characteristics and informal workplace learning. *Gruppe. Interaktion. Organisation. Zeitschrift für Angewandte Organisationspsychologie (GIO)*, *54*(3), 289–299. https://doi.org/10.1007/s11612-023-00702-8.

Gupta, A. K., Smith, K. G., & Shalley, C. E. (2006). The interplay between exploration and exploitation. *Academy of Management Journal*, *49*(4), 693–706. https://doi.org/10.5465/AMJ.2006.22083026.

Harteis, C., Bauer, J., & Gruber, H. (2008). The culture of learning from mistakes: how employees handle mistakes in everyday work. *International Journal Of Educational Research*, *47*(4), 223–231. https://doi.org/10.1016/j.ijer.2008.07.003.

van Harten, J., De Cuyper, N., Guest, D., Fugate, M., Knies, E., & Forrier, A. (2020). Introduction to special issue on HRM and employability: mutual gains or conflicting outcomes? *The International Journal of Human Resource Management*, *31*(9), 1095–1105. https://doi.org/10.1080/09585192.2020.1740457.

Heckhausen, H., & Gollwitzer, P. M. (1987). Thought contents and cognitive functioning in motivational versus volitional states of mind. *Motivation and emotion*, *11*, 101–120. https://doi.org/10.1007/BF00992338.

Helmrich, R., & Leppelmeier, I. (2020). *Sinkt die Halbwertszeit von Wissen? Theoretische Annahmen und empirische Befunde [Is the half-life of knowledge decreasing? Theoretical assumptions and empirical findings]umptions and empirical findings*. Bonn: Bundesinstitut für Berufsbildung.

Hilbert, M., & López, P. (2011). The world's technological capacity to store, communicate, and compute information. *Science*, *332*(6025), 60–65. https://doi.org/10.1126/science.1200970.

Hobfoll, S. E., Halbesleben, J., Neveu, J. P., & Westman, M. (2018). Conservation of resources in the organizational context: the reality of resources and their consequences. *Annual Review of Organizational Psychology and Organizational Behavior*, *5*, 103–128. https://doi.org/10.1146/annurev-orgpsych-032117-104640.

Holmes, W., & Littlejohn, A. (2024). Artificial intelligence for professional learning. In *Handbook of artificial intelligence at work* (pp. 191–211). Edward Elgar Publishing. https://doi.org/10.4337/9781800889972.00018.

Houben, E., De Cuyper, N., Kyndt, E., & Forrier, A. (2021). Learning to be employable or being employable to learn: the reciprocal relation between perceived employability and work-related learning. *Journal of Career Development*, *48*(4), 443–458. https://doi.org/10.1177/0894845319867431.

Kauffeld, S. (2016). *Nachhaltige Personalentwicklung und Weiterbildung*. Springer.

Kirby, J. R., Knapper, C. K., Evans, C. J., Carty, A. E., & Gadula, C. (2003). Approaches to learning at work and workplace climate. *International Journal of Training and Development*, *7*(1), 31–52. https://doi.org/10.1111/1468-2419.00169.

Knudsen, E. S., & Lien, L. B. (2023). The half-life of knowledge and strategic human capital. *Human Resource Management Review*, *33*(4), 100989. https://doi.org/10.1016/j.hrmr.2023.100989.

Koporcic, N., Sjödin, D., Kohtamäki, M. (2024). Embracing the "fail fast and learn fast" mindset: conceptualizing learning from failure in knowledge-intensive SMEs. *Small Business Economics.* https://doi.org/10.1007/s11187-024-00897-0.

Kortsch, T., & Kauffeld, S. (2019). Validation of a German version of the dimensions of the learning organization questionnaire (DLOQ) in German craft companies. *Zeitschrift für Arbeits- und Organisationspsychologie A&O*, *63*(1), 15–31. https://doi.org/10.1026/0932-4089/a000282.

Kortsch, T., Schulte, E. M., & Kauffeld, S. (2019). Learning @ work: informal learning strategies of German craft workers. *European Journal of Training and Development*, *43*(5/6), 418–434. https://doi.org/10.1108/EJTD-06-2018-0052.

Kortsch, T., Decius, J., & Paulsen, H. (2024). *Lernen in Unternehmen. Formal, informell, selbstreguliert*. Hogrefe.

Kraiger, K., & Ford, J. K. (2021). The science of workplace instruction: learning and development applied to work. *Annual Review of Organizational Psychology and Organizational Behavior*, *8*, 45–72. https://doi.org/10.1146/annurev-orgpsych-012420-060109.

Kyndt, E., & Baert, H. (2013). Antecedents of employees' involvement in work-related learning: a systematic review. *Review of Educational Research*, *83*(2), 273–313. https://doi.org/10.3102/0034654313478021.

Marsh, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, *2*(1), 71–87. https://doi.org/10.1287/orsc.2.1.71.

Marsick, V. J., & Volpe, M. (1999). The nature and need for informal learning. *Advances in Developing Human Resources*, *1*(3), 1–9. https://doi.org/10.1177/152342239900100302.

Mehner, L., & Kauffeld, S. (2023). Welche Faktoren machen den Unterschied? Eine Mixed Method Untersuchung zum Transfererfolg und der Wissensweitergabe nach Weiterbildungen. *Gruppe. Interaktion. Organisation. Zeitschrift Für Angewandte Organisationspsychologie (GIO)*, *54*(3), 347–359. https://doi.org/10.1007/s11612-023-00693-6.

Miron-Spektor, E., Ingram, A., Keller, J., Smith, W. K., & Lewis, M. W. (2018). Microfoundations of organizational paradox: the problem

is how we think about the problem. *Academy of Management Journal*, *61*(1), 26–45. https://doi.org/10.5465/amj.2016.0594.

Noe, R. A., Clarke, A. D., & Klein, H. J. (2014). Learning in the twenty-first-century workplace. *Annu. Rev. Organ. Psychol. Organ. Behav.*, *1*(1), 245–275. https://doi.org/10.1146/annurev-orgpsych-031413-091321.

Paas, F., Van Gog, T., & Sweller, J. (2010). Cognitive load theory: new conceptualizations, specifications, and integrated research perspectives. *Educational Psychology Review*, *22*, 115–121. https://doi.org/10.1007/s10648-010-9133-8.

Perkins, D., Rigolizzo, M., & Biller, M. (2013). Learning better from work: three stances that make a difference. Learning innovations lab. https://www.learninginnovationslab.org/wp-content/uploads/_mediavault/2013/12/FINALcopyThree-stances-2013-02-21-distribution.pdf

Petermann, M. K. H., & Zacher, H. (2021). Development of a behavioral taxonomy of agility in the workplace. *International Journal of Managing Projects in Business*, *14*(6), 1383–1405. https://doi.org/10.1108/IJMPB-02-2021-0051.

Phillips, J. J., & Phillips, P. P. (2016). *Handbook of training evaluation and measurement methods*. Routledge.

Putnam, L. L., Fairhurst, G. T., & Banghart, S. (2016). Contradictions, dialectics, and paradoxes in organizations: a constitutive approach. *Academy of Management Annals*, *10*(1), 65–171. https://doi.org/10.1007/s10648-010-9133-8.

Rausch, A., Seifried, J., & Harteis, C. (2017). Emotions, coping and learning in error situations in the workplace. *Journal of Workplace Learning*, *29*(5), 374–393. https://doi.org/10.1108/JWL-01-2017-0004.

Robinson, S. L., & Rousseau, D. M. (1994). Violating the psychological contract. Not the exception but the norm. *Journal of Organizational Behavior*, *15*(3), 245–259. https://doi.org/10.1002/job.4030150306.

Sailer, M., & Homner, L. (2020). The gamification of learning: a meta-analysis. *Educational Psychology Review*, *32*(1), 77–112. https://doi.org/10.1007/s10648-019-09498-w.

Schad, J., Lewis, M. W., Raisch, S., & Smith, W. K. (2016). Paradox research in management science: looking back to move forward. *Academy of Management Annals*, *10*(1), 5–64. https://doi.org/10.1080/19416520.2016.1162422.

Schaper, N., Decius, J., & Kauffeld, S. (2023). Formen und Bedingungen des arbeitsbezogenen Lernens in einer sich dynamisch wandelnden Arbeitswelt [Forms and conditions of work-related learning in a dynamically changing world of work]. *Gruppe. Interaktion. Organisation. Zeitschrift für Angewandte Organisationspsychologie (GIO)*, *54*(3), 281–287. https://doi.org/10.1007/s11612-023-00711-7.

Sitzmann, T., & Ely, K. (2011). A meta-analysis of self-regulated learning in work-related training and educational attainment: what we know and where we need to go. *Psychological Bulletin*, *137*(3), 421–442. https://doi.org/10.1037/a0022777.

Smet, K., Grosemans, I., De Cuyper, N., & Kyndt, E. (2022). Outcomes of informal work-related learning behaviours: a systematic literature review. *Scandinavian Journal of Work and Organizational Psychology*, *7*(1), 1–18. https://doi.org/10.16993/sjwop.151.

Smith, W. K., & Lewis, M. W. (2011). Toward a theory of paradox: a dynamic equilibrium model of organizing. *Academy of Management Review*, *36*(2), 381–403. https://doi.org/10.5465/AMR.2011.59330958.

Tannenbaum, S. I., & Wolfson, M. A. (2022). Informal (field-based) learning. *Annual Review of Organizational Psychology and Organizational Behavior*, *9*(1), 391–414. https://doi.org/10.1146/annurev-orgpsych-012420-083050.

Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review*, *110*(3), 403–421. https://doi.org/10.1037/0033-295X.110.3.403.

Weick, K. E., & Quinn, R. E. (1999). Organizational change and development. *Annual Review of Psychology*, *50*(1), 361–386. https://doi.org/10.1146/annurev.psych.50.1.361.

Wiesenfeld, B. M., Reyt, J. N., Brockner, J., & Trope, Y. (2017). Construal level theory in organizational research. *Annual Review of Organizational Psychology and Organizational Behavior*, *4*, 367–400. https://doi.org/10.1146/annurev-orgpsych-032516-113115.

Wißhak, S. (2022). Transfer in der berufsbezogenen Weiterbildung: Systematisches Literaturreview und Synthese mit Blick auf die Handlungsmöglichkeiten der Lehrenden [Transfer in vocational continuing education: Systematic literature review and synthesis with a view to teachers' options for action]. *Zeitschrift für Weiterbildungsforschung*, *45*(1), 69–88. https://doi.org/10.1007/s40955-022-00204-y.

Zhao, B. (2011). Learning from errors: the role of context, emotion, and personality. *Journal of Organizational Behavior*, *32*(3), 435–463. https://doi.org/10.1002/job.696.

Zia, M. Q., Decius, J., Naveed, M., & Anwar, A. (2022). Transformational leadership promoting employees' informal learning and job involvement: the moderating role of self-efficacy. *Leadership & Organization Development Journal*, *43*(3), 333–349. https://doi.org/10.1108/LODJ-06-2021-0286.

Dr. Hilko Paulsen studied psychology at the University of Cologne and completed his doctorate at the TU Braunschweig. He worked as an internal consultant specialising in leadership development at German customs and is currently head of HR development at the Region Hannover, a municipal administration.

Prof. Dr. Timo Kortsch studied psychology and holds a professorship in Business Psychology at IU International University. His research areas include work-related learning and learning cultures, workplace happiness, stress prevention strategies, and sustainability. In addition to his academic role, he advises companies on successfully navigating transformation projects, utilizing evidence-based methodologies.


© Lukas Klose, Uni Bremen

Dr. Julian Decius is the head of the unit Organizational Psychology in the Faculty of Business Studies and Economics at University of Bremen, Germany, where he holds a tenure-track position. He received his PhD in Work and Organizational Psychology from Paderborn University, Germany, for his research on informal workplace learning of blue-collar workers. His research interests are on learning and development in the workplace and in higher education, strategic competence development in small and medium-sized enterprises, new work and new learning, job crafting, employability, algorithmic management of gig workers, and soccer players' development.