



# Outcomes of Informal Work-Related Learning Behaviours: A Systematic Literature Review

REVIEW

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## ABSTRACT

Both in research and practice, many believe that informal work-related learning contributes to plenty of important and positive outcomes. As a result, research on informal work-related learning outcomes is quickly accelerating. The field has become fragmented across disciplines and traditions. In response, this study provides a systematic review of the literature on outcomes associated with informal work-related learning behaviour of employees. In total, 39 studies were included in our review. Our results show that outcomes associated with informal work-related learning behaviour go beyond the specific job, as is sometimes assumed. Instead, outcomes vary across dimensions, going from hands-on to abstract, short-term to long-term, or job-specific to more generic. We provide an overview of outcomes in three categories, namely (1) changes in knowledge, skills, and attitudes, (2) individuals' and organizations' professional achievement, and (3) sustaining a future development.

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## INTRODUCTION

Society is characterized by a rapid expansion of knowledge, information, and new technologies (Hurtz & Williams, 2009; Schürmann & Beusaert, 2016). Organizations have to comply with these developments, also in terms of personnel development (Ellinger, 2005). This has spurred interest and investment in work-related learning (Kyndt & Baert, 2013), initially in formal work-related learning but more recently also in informal work-related learning (Baert, 2018; Boud & Rooney, 2018). Research on informal work-related learning has developed in two streams. A first and rich stream has identified potential factors that promote informal learning of employees. This has been the topic of recent reviews (e.g., Cerasoli et al., 2018, Jeong et al., 2018; Kyndt et al., 2018). A comparatively weaker but quickly growing research stream has focused upon outcomes of informal work-related learning. This is a particularly challenging domain, particularly in comparison to formal work-related learning. Formal work-related learning is characterized by an intention to learn and a predetermined learning objective. Upon success, participants are often granted a credential, for example a diploma or certificate (Kyndt & Baert, 2013). The learning outcome is visible and recognizable for oneself and others. In comparison, informal work-related learning is less visible and tangible, and outcomes associated with informal work-related learning are less straightforward owing to lack of formal qualifications (Mulder, 2013; Segers et al., 2018; Werquin, 2010).

An account of possible outcomes of informal work-related learning is, however, much needed, if only to verify the assumption that learning brings about positive outcomes (Baert, 2018). Recently, Cerasoli et al. (2018) published a meta-analysis on the skills, knowledge, attitudes, and performance associated with informal work-related learning. While this has merit, we see two potential gaps. First, many outcomes go beyond this specific set and may often go unnoticed. For example, prior research pointed to the role of informal work-related learning in employees' employability and personal development in general (e.g., van der Heijde & van der Heijden, 2006). Second, informal learning outcomes are often investigated in qualitative studies which are not included in meta-analyses. This too may lead to a bias towards certain group of outcomes.

The aim of this study is to provide an overview of the current empirical research on informal work-related learning outcomes by means of a systematic literature review. In doing so, we add to existing categorizations and review studies (e.g., Cerasoli et al., 2018), by taking a broader perspective along two ways. First, we go beyond skills, knowledge, attitudes, and performance. More specifically, we classify outcomes related to (1) changes in knowledge, skills, and attitudes, (2) individuals' and organizations' professional achievement, and (3)

sustaining one's future development. This classification aligns with definitions of informal work-related outcomes (Doyle et al., 2012; Kyndt & Baert, 2013; Matthews, 1999). Second, we also include qualitative and mixed-method studies.

## FORMAL AND INFORMAL WORK-RELATED LEARNING

Traditionally, both HRD professionals and researchers focused on formal work-related learning (Choi & Jacobs, 2011). Formal work-related learning occurs through intentionally planned educational learning activities in an environment that is designed for learning (Streumer & van der Klink, 2004). In other words, it occurs within a fixed time frame and with the help of a designated teacher or facilitator in view of achieving predetermined learning objectives (Eraut, 2000).

Informal work-related learning was initially defined as all work-related learning that is not formal. This interpretation made informal work-related learning a very broad heading (Cunningham & Hillier, 2013; Watkins & Marsick, 1992). As a result, different definitions emerged with some overlap but also many differences in interpretation (Manuti et al., 2015; Tannenbaum et al., 2010). To get beyond this disarray, it is proposed to better bound the concept of informal work-related learning, thereby providing meaningful differences between informal work-related learning and related concepts, such as on-the-job training (Rothwell & Kazanas, 1994), social learning (Bandura, 1962), workplace learning (Dretske, 1981), incidental learning (Watkins & Marsick, 1992), and so on (Tannenbaum et al., 2010; Wolfson et al., 2018).

Several definitions exist and different streams of research have defined informal learning in varying ways (Tannenbaum et al., 2010). In this paper, we define informal work-related learning as the self-directed intentional participation in informal work-related learning activities, which take place outside formally structured learning settings, and that in the short-term result in sustainable changes in work-related knowledge, skills, and/or attitudes and/or in the longer term fosters individuals' and organizations' present professional achievement and future development (Doyle et al., 2012; Kyndt & Baert, 2013; Matthews, 1999). This definition will be used as the basis for this systematic literature review (for example with regards to inclusion and exclusion criteria). Three elements in this definition stand out.

First, the definition focuses on employees' actual behaviour (Raemdonck et al., 2014), also coined participation in learning activities (e.g., Grosemans, Smet, et al., 2020) or in development practices (Collin et al., 2020). This behaviour is at the core of informal learning when seen from a process perspective: Triggers

or resources facilitate the engagement in informal work-related learning behaviours and this leads to outcomes (Kyndt et al., 2016). Distinguishing between triggers, learning behaviours, and outcomes is crucial when the aim is to provide an account of outcomes of informal work-related learning.

Second, the definition emphasizes that these informal learning activities are self-directed, meaning that the employee him or herself is in control of the learning (Cerasoli et al., 2018; Wolfson et al., 2018). In line with Tannenbaum et al. (2010), this implies that informal work-related learning involves some conscious and deliberate reflection on the situation, rather than occurring by accident (i.e., incidental learning; Cerasoli et al., 2018, Watkins & Marsick, 1992). Note that other research streams did strongly focus on the intentionality or conscientiousness of learning behaviour (e.g., Doornbos et al., 2004). For example, implicit learning happens unconsciously: The individual is not aware that (s)he is learning and thus has no learning intention. This could be the case for the completely unconscious internalization of values, attitudes, skills, knowledge, and so on during working life (Eraut, 2000). Studying unconscious and/or unintentional learning has much value, yet this study includes learning activities that are undertaken intentionally and consciously, complying with the idea of self-directedness (e.g., Tannenbaum et al., 2010) and individual engagement in activities (e.g., Billett, 2004).

Third, informal work-related learning occurs within the context of carrying out one's work activities and thus outside formally designated learning settings (Tannenbaum et al., 2010). The informal work-related learning activities can be either individually undertaken or through interaction with others (Billett, 2018; Noe et al., 2013). Examples of informal work-related learning activities include experimenting, reflecting, searching the Internet or books for information, trial and error as well as observing, seeking help, or feedback from others. The definition and illustrations do not exclude social learning or learning activities that arise from interactions (i.e., Billett, 2004), yet it does focus on learning at the individual level (rather than team learning or organizational learning). We see individual learning experiences as a prerequisite for organizational learning (e.g., Ellinger, 2004; Ellström, 2001, 2010).

## **(INFORMAL) WORK-RELATED LEARNING OUTCOMES**

In line with the definition of informal work-related learning used in this systematic review, outcomes are defined as the sustainable changes in work-related knowledge, skills, or attitudes that result from the engagement in informal work-related learning activities and/or that

foster individuals' and organizations' present professional achievement and future development (Doyle et al., 2012; Kyndt & Baert, 2013; Matthews, 1999). Work-related learning is approached and explored by many different disciplinary backgrounds (Manuti et al., 2015), each with an interest in (often context-) specific outcomes. Accordingly, researchers do not appear to build on each other's work, and this left the field fragmented. As a result, different outcomes classifications emerged in the literature in an organic fashion. Most classifications grew organically and are subject to change, but they can be aggregated in three overall classification types (Kyndt et al., 2014).

A first classification type focuses on KSA, that is, Knowledge, Skills, and Attitudes. An example is the categorization of Kraiger et al. (1993), who distinguish between cognitive, skills-based, and affective learning outcomes. Cognitive learning outcomes are knowledge-based and include verbal knowledge, knowledge organization, and cognitive strategies. Skill-based learning outcomes relate to the development of technical or motor skills and comprises skill compilation and automaticity. Affective learning outcomes include both attitudinal and motivational outcomes, such as disposition, self-efficacy, and goal setting. This categorization has been largely based on the work of Gagné (1984), who distinguished between intellectual skills (procedural knowledge), verbal information (declarative knowledge), cognitive strategies (executive control processes), motor skills, and attitudes. A potential drawback of this categorization is that it does not include outcomes that go beyond the specific knowledge, skills, and attitudes acquired (Kyndt & Baert, 2013). Accordingly, this categorization is too narrow when the aim is to review all potential outcomes of informal learning.

A second classification type takes a more fine-grained perspective by focusing on learning content. Multiple classifications fall under this type. Onstenk (1997), for example, identified seven learning outcomes: technical-occupational, methodological, organizational, strategic, social-communicative, normative-cultural, and developmental learning outcomes. As another example, Berings et al. (2008) advance five learning outcomes: technical-practical, socio-emotional, organizational, developmental, and a proactive attitude to work. A third example comes from Eraut (2004), with eight learning outcomes: task performance, awareness and understanding, personal development, teamwork, role performance, academic knowledge and skills, decision making and problem solving, and judgment. The popularity of this type of classification can be ascribed to the job specific research on informal learning (Kyndt & Beusaert, 2017). Most studies took one specific occupation into account (such as nurses) so that informal work-related learning is embedded in daily work activities. This created the need to refine existing

classifications tailored to the context (e.g., Berings et al., 2008).

A third classification type aims to go beyond the specificities of jobs: It focuses on the extent to which learning outcomes are applicable among different functions and organizations. Kluytmans and van Sluijs (1995), for example, differentiated between strategic, organizational-bound, and job-specific learning outcomes. The strategic learning outcomes are vital to achieve the organization's strategy and are therefore important to all employees within the organization. Organizational-bound learning outcomes are necessary for certain groups or functional levels of employees, for example all executives. Job-specific learning outcomes are essential within a particular role or function. This typology has inspired related classifications: Van Beirendonck (2004) distinguishes between generic, level-specific, and job-specific learning outcomes and Kyndt et al. (2014) between generic, organizational-level, and job-specific learning outcomes. Despite the value of this type of classification, it only allows to classify knowledge, skills, and attitudes (or their integration): It does not account for other informal learning outcomes, for example outcomes related to individuals' and organizations' present professional achievement and future development. Those are, however, integral part of the definition of informal work-related learning outcomes (Doyle et al., 2012; Kyndt & Baert, 2013; Matthews, 1999; Nilsson & Ellström, 2012). When aiming to provide an overview of all potential outcomes of informal learning, it is crucial to also take these aspects into account.

## PRESENT STUDY

Many believe that the engagement in informal work-related learning leads to overall positive outcomes (Cerasoli et al., 2018). This has led to growing attention to informal work-related outcomes. The field is quickly growing, yet from different disciplinary backgrounds and this brings along risk of fragmentation. A literature review could serve to increase our understanding of informal work-related outcomes and to bridge the different disciplines (Torraco, 2005). Accordingly, this study will endeavour to answer which outcomes of informal work-related learning behaviours have been identified by prior empirical research by means of a systematic literature review. To achieve this aim, the current study takes a broad view on outcomes. First, we will incorporate existing categorizations of KSAs to further refine the identified changes in knowledge, skills, and attitudes. Second, we will go beyond knowledge, skills, and attitudes. In particular, we will include individuals' and organizations' professional achievement, and sustaining one's future development. If our systematic literature

review reveals outcomes that cannot be classified into one of these categories, additional categories will be added to further refine the proposed framework. The proposed categorization allows us to understand the time-layered structure of informal work-related learning outcomes: knowledge, skills, or attitudes are outcomes in the relatively short and immediate future, individuals' and organizations' professional achievement are further away and sustainable development is an outcome in the long term. This study will also provide insight into how and when these outcomes were investigated and in which professions. In line with Tannenbaum et al.'s (2010) call for more research on informal work-related learning outcomes, this study will highlight several possible avenues for future research.

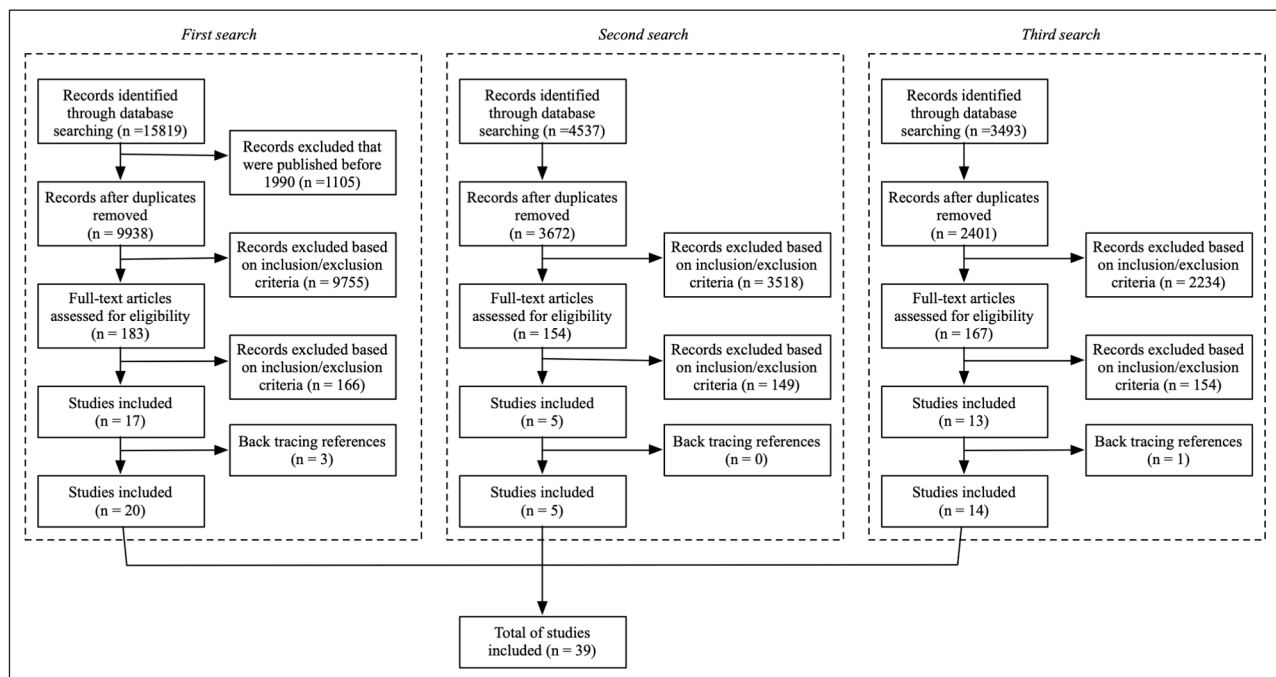
## METHOD

The methodology of this systematic review is in line with the Preferred Reported Items for Systematic Review and Meta-analysis (PRISMA) guidelines. Detailed information about the study selection process is provided in the PRISMA flowchart (see [Figure 1](#)).

## LITERATURE SEARCH

The literature was systematically searched for relevant studies. To increase transparency and allow replication, we chose to include databases and not interfaces (e.g., ProQuest, Web of Science; for example, Harari et al., 2020). The following electronic databases were used: Education Resources Information Center (ERIC), Social Sciences Citation Index (SSCI), EconLit, ScienceDirect, Academic Search Elite, and Business Source Premier. We draw on Kyndt and Baert (2013) for database selection: They conducted a systematic review study on antecedents of work-related learning (i.e., also including informal learning) and selected these six databases.

The search terms were "informal learning", "incidental learning", "implicit learning", "everyday learning", "workplace learning", "professional learning", "on-the-job learning", and "learning outcomes". The search terms were combined with "employees" and "workers" given the focus upon learning related to work. Employees/workers are hired by an employer, hence contracted, to do a specific job or to provide labour. As a result, studies concerning students, unemployed, or self-employed persons were excluded. We started the search in April 2014, with 15,819 hits. Since attention for informal work-related learning boosted since the nineties (Eraut, 2004), we chose to exclude studies published before 1990. This resulted in 14,714 remaining articles. The search was repeated a second and third time, covering the period April 2014–January 2017 and January 2017–April 2020, to retrieve recently published manuscripts.



**Figure 1** Preferred Reported Items for Systematic Review and Meta-Analysis Flowchart.

Unfortunately, Academic Search Elite and Business Source Premier were not used for the second search as the authors had no longer access to these databases. For the same reason, Academic Search Elite, Business Source Premier, and EconLit were not used for the third search. The second and third search resulted in 4,537 and 3,493 additional hits, respectively.

## LITERATURE SELECTION

The selection process involved four phases. In Phase 1, we removed double records using the EndNote software, leaving 9,938 studies for the initial search, 3,672 for the second search, and 2,401 for the third search. In Phases 2 and 3, we compared the studies against five criteria, based on title and abstract (Phase 2) and then on skim-read of the full articles (Phase 3). When in doubt in Phase 2, articles were taken to Phase 3. The criteria were as follows. First, only studies with a focus on employees' outcomes associated with the participation in informal work-related learning activities were included. As such, studies that did not investigate this specific relationship were removed. Second, we focused upon informal work-related learning behaviour at the individual level. We excluded studies with a specific and exclusive focus upon the team level without attention for learning at the individual level, such as studies focusing on communities (of practice) or collaboration. Third, given our focus upon demonstrated outcomes, we only included empirical studies (i.e., studies in which data is collected concerning the outcomes of informal work-related learning) and excluded conceptual/theoretical papers. Fourth, the studies had to be written in English. Finally, only studies published in peer-reviewed journals were included. The reason is twofold. One reason relates to the difficulty of

retrieving unpublished work. A second reason concerns ease of replication in the future. Phase 2 resulted in 183 remaining studies for the initial search, 154 for the second search, and 167 for the third search. Phase 3 led to 17 remaining studies for the initial search, five for the second search, and 13 for the third search. In the final phase (Phase 4), three articles were added to the initial search by means of back tracing references. No studies were added in the second search, and one article was added in the third search through back tracing references.

We then checked qualitative and mixed-method studies against the guidelines of the Critical Appraisal Skills Programme (CASP, 2018) and quantitative studies against the checklists of the National Institute for Health and Clinical Excellence (2009). This was done to exclude studies of potentially low quality. More specifically, each study was quoted on the following components: clear statement of the aims of the research, appropriate design, transparent sampling procedure, profound data selection and analysis, consideration of possible ethical issues, and good description of the results (see Appendix). As all the primary studies had a medium or high quality, no studies were excluded. This brings the final selection to 39 primary studies.

## ANALYSIS OF THE LITERATURE

The literature analysis consisted of four steps. First, we summarized the literature based on a range of study characteristics (e.g., author(s), date of publication, study type, data collection; see [Table 1](#)). Second, each study was thoroughly reread and the informal work-related learning outcomes were extracted from the studies (see Appendix). Third, we allocated the different informal work-related learning outcomes to a category.



CATEGORY	CLASS	INFORMAL LEARNING OUTCOME
1. Changes in Knowledge, Skills, or Attitudes	1A. Job-specific KSA: Job-Specific Knowledge	<ul style="list-style-type: none"> <li>- Improvement of work-related knowledge (Doyle et al., 2012)</li> <li>- Job-specific knowledge (van der Klink et al., 2012)</li> <li>- Subject knowledge (Burns &amp; Schaefer, 2003; Henze et al., 2009; Scribner, 1999) <ul style="list-style-type: none"> <li>• Gain knowledge for preparing and giving lessons (Lecat et al., 2019)</li> <li>• Study content (Lecat et al., 2019)</li> </ul> </li> <li>- Knowledge of technical nursing (Berings et al., 2007; Berings et al., 2008)</li> <li>- Knowledge of football techniques (Werner &amp; Dickson, 2018)</li> <li>- Knowledge of general behaviour (Werner &amp; Dickson, 2018)</li> <li>- Tactics/strategy on the field through peer learning (Werner &amp; Dickson, 2018)</li> <li>- How to deal with media and fans and pressure (Werner &amp; Dickson, 2018)</li> <li>- How to deal with pressure (Werner &amp; Dickson, 2018)</li> </ul>
	1A. Job-specific KSA: Job-Specific Skills	<ul style="list-style-type: none"> <li>- Pedagogical skills (Scribner, 1999)</li> <li>- Handle discipline (Burns, 2008; Burns et al., 2005; Lecat et al., 2019)</li> <li>- Classroom management strategies (Burns, 2008; Burns &amp; Schaefer, 2003; Burns et al., 2005; Henze et al., 2009; Kang &amp; Cheng, 2014; Lecat et al., 2019; Scribner, 1999) <ul style="list-style-type: none"> <li>• Optimized teaching methods (Henze et al., 2009; Kang &amp; Cheng, 2014; Lecat et al., 2019)</li> <li>• The ability to use multimedia learning tools in presenting a lesson (Burns, 2008; Burns et al., 2005)</li> <li>• The ability to control and maintain equipment, tools, and supplies in a vocational laboratory (Burns, 2008; Burns et al., 2005)</li> <li>• Preparation and planning (Burns &amp; Schaefer, 2003)</li> <li>• The ability to maintain records and paperwork (Burns, 2008; Burns et al., 2005)</li> </ul> </li> <li>- Technical-practical skills</li> <li>- Nursing skills (Berings et al., 2007; Berings et al., 2008) <ul style="list-style-type: none"> <li>• Information transfer to patients (Berings et al., 2007; Berings et al., 2008)</li> <li>• Information transfer to colleagues (Berings et al., 2007; Berings et al., 2008)</li> </ul> </li> <li>- Managerial skills (Brandão et al., 2012; Enos et al., 2003) <ul style="list-style-type: none"> <li>• Financial business management (Brandão et al., 2012)</li> <li>• Process management (Brandão et al., 2012)</li> <li>• Socio-environmental management (Brandão et al., 2012)</li> </ul> </li> <li>- Job-specific skills (van der Klink et al., 2012)</li> <li>- Improvement of work-related skills (Doyle et al., 2012)</li> </ul>
	1A. Job-specific KSA: Job-Specific Attitudes	<ul style="list-style-type: none"> <li>- Changes in meta-cognitions <ul style="list-style-type: none"> <li>• Consider educational reform (Scribner, 1999)</li> <li>• Change in cognitions and conceptions of teaching (Hoekstra et al., 2009; Hoekstra &amp; Korthagen, 2011; Kang &amp; Cheng, 2014; Meirink et al., 2009)</li> </ul> </li> <li>- Job-specific attitudes (van der Klink et al., 2012)</li> </ul>
	1A. Job-specific KSA: General Professional Competence and Proficiency	<ul style="list-style-type: none"> <li>- Improved competence (Crouse et al., 2011; Tannenbaum, 1997) <ul style="list-style-type: none"> <li>• Nursing competence (Takase et al., 2018; Takase et al., 2015)</li> <li>• Principal practice (Bickmore, 2012)</li> <li>• Corporate Social Responsibility Competence (Osagie et al., 2018)</li> <li>• Self-perceived change in knowledge, attitudes, and behaviour (Smith et al., 2006)</li> </ul> </li> <li>- Occupational expertise (Froehlich et al., 2014; Froehlich et al., 2019; Gerken et al., 2016; Lecat et al., 2018)</li> </ul>
	1B. Generic KSA	<ul style="list-style-type: none"> <li>- General skills (Berings et al., 2007, Berings et al., 2008)</li> <li>- Daring to communicate (Berings et al., 2007, Berings et al., 2008)</li> <li>- Task-management skills (Berings et al., 2007, Berings et al., 2008)</li> <li>- Coordinating tasks (Berings et al., 2007, Berings et al., 2008)</li> <li>- Physical coping (Berings et al., 2007, Berings et al., 2008)</li> <li>- Appearance (Berings et al., 2007, Berings et al., 2008)</li> <li>- Proactive attitude (Berings et al., 2007, Berings et al., 2008)</li> <li>- Leadership skills (Crouse et al., 2011; Werner &amp; Dickson, 2018)</li> <li>- Can-do attitude (Werner &amp; Dickson, 2018)</li> <li>- Generic knowledge, skills, and attitudes (van der Klink et al., 2012)</li> <li>- Very generic knowledge, skills, and attitudes (van der Klink et al., 2012)</li> </ul>

CATEGORY	CLASS	INFORMAL LEARNING OUTCOME
2. Individuals' and Organizations' Professional Achievement	2A. Performance	<ul style="list-style-type: none"> <li>- Improved professional practice (Crouse et al., 2011)</li> <li>- Improved organizational performance (Panagiotakopoulos, 2011) <ul style="list-style-type: none"> <li>• Reducing employee errors in the production process (Panagiotakopoulos, 2011)</li> <li>• Helping their firms to meet skill shortage needs (Panagiotakopoulos, 2011)</li> <li>• Facilitating the introduction of new technology (Panagiotakopoulos, 2011)</li> </ul> </li> <li>- Organizational readiness (Patterson et al., 2017)</li> <li>- Competitive advantage (Crouse et al., 2011)</li> <li>- Job performance (Choi et al., 2020; Doyle et al., 2012; Park &amp; Choi, 2016; Patterson et al., 2017; Wolfson et al., 2018; Wolfson et al., 2019; Yun et al., 2019) <ul style="list-style-type: none"> <li>• Value of learning at work as mediator (Park &amp; Choi, 2016)</li> <li>• Job characteristics, nonpunitive climate and staffing as moderators (Wolfson et al., 2018; Wolfson et al., 2019)</li> </ul> </li> </ul>
	2B. Changes in Behaviour	<ul style="list-style-type: none"> <li>- Display/change in professional teacher behaviour (Burns, 2008; Burns et al., 2005; Hoekstra et al., 2009; Hoekstra &amp; Korthagen, 2011)</li> <li>- Innovative work behaviour (Lecat et al., 2018)</li> </ul>
	2C. Understanding and Navigating in the Organization	<ul style="list-style-type: none"> <li>- Learn about the politics and power bases (Burns &amp; Schaefer, 2003)</li> <li>- Understanding the underlying culture and form a new identity as a member of the community (Kang &amp; Cheng, 2014)</li> <li>- Knowing and understanding about students' lives and diverse cultures (Scribner, 1999)</li> <li>- Role and environmental skills (Berings et al., 2007; Berings et al., 2008)</li> <li>- Being better able to perform their multiple and changing strategic advisor roles (Crouse et al., 2011)</li> <li>- Improvement of understanding of the organization (Doyle et al., 2012)</li> <li>- Organizational commitment via self-efficacy (Yoon et al., 2019)</li> <li>- Training viewed more positively in company (Tannenbaum, 1997)</li> </ul>
	2D. Socio-Emotional Outcomes	<ul style="list-style-type: none"> <li>- Respect for others (Werner &amp; Dickson, 2018)</li> <li>- Improvement of understanding of others (Doyle et al., 2012)</li> <li>- Socio-emotional contact with patients and family (Berings et al., 2007; Berings et al., 2008)</li> <li>- Socio-emotional contact with colleagues (Berings et al., 2007; Berings et al., 2008)</li> <li>- Personal/psychological coping (Berings et al., 2007; Berings et al., 2008)</li> <li>- Improved self-confidence/efficacy (Crouse et al., 2011; Doyle et al., 2012; Henze et al., 2009; Patterson et al., 2017; Yoon et al., 2019)</li> <li>- Increased passion about issues and needed changes (Crouse et al., 2011)</li> <li>- Makes work interesting (Doyle et al., 2012)</li> <li>- Emotional well-being (Burns &amp; Schaefer, 2003)</li> <li>- Job satisfaction (Alonderienė, 2010)</li> <li>- Satisfaction with development (Tannenbaum, 1997)</li> </ul>
3. Sustaining one's Future Development	3A. Lifelong Learning Outcomes	<ul style="list-style-type: none"> <li>- Learning and collecting information (Berings et al., 2007; Berings et al., 2008)</li> <li>- Desire to learn (Crouse et al., 2011)</li> <li>- Not getting stagnant (Crouse et al., 2011)</li> <li>- Being up to date (Crouse et al., 2011)</li> <li>- Helping to be a better learner (Doyle et al., 2012)</li> <li>- Improvement of attitude about learning (Doyle et al., 2012)</li> <li>- Self-knowledge (Berings et al., 2007; Berings et al., 2008)</li> <li>- Understanding more about self (Crouse et al., 2011)</li> <li>- Give "a more complete and balanced perspective on things" (Crouse et al., 2011)</li> <li>- Improvement of understanding of myself (Doyle et al., 2012)</li> <li>- Develop different sensibilities (Burns &amp; Schaefer, 2003)</li> </ul>
	3B. Career Outcomes	<ul style="list-style-type: none"> <li>- Career development (Crouse et al., 2011; Doyle et al., 2012; Werner &amp; Dickson, 2018)</li> <li>- Competence-based employability <ul style="list-style-type: none"> <li>• Anticipation and optimization (Froehlich et al., 2014; Froehlich et al., 2015; Froehlich et al., 2019; Gerken et al., 2016; Lecat et al., 2018)</li> <li>• Personal flexibility (Froehlich et al., 2014; Froehlich et al., 2015; Froehlich et al., 2019; Gerken et al., 2016; Lecat et al., 2018)</li> <li>• Corporate sense (Froehlich et al., 2015; Froehlich et al., 2019; Gerken et al., 2016; Lecat et al., 2018)</li> <li>• Balance (Froehlich et al., 2015; Froehlich et al., 2019; Gerken et al., 2016; Lecat et al., 2018)</li> </ul> </li> <li>- Employability (Panagiotakopoulos, 2011)</li> <li>- Internal marketability (Kortsch et al., 2019)</li> </ul>

**Table 1** Inventory of the Informal Work-Related Learning Outcomes.

Every passage was labelled with a code that referred to one of three categories: (1) changes in knowledge, skills, and attitudes, (2) individuals' and organizations'

professional achievement, and (3) sustaining one's future development (see **Table 1**). Note that these categories are interconnected, as changes in work-

related knowledge, skills, and attitudes contribute to individuals' and organizations' professional achievement, and ultimately, sustainable changes in one's future development. Starting from the three categories entailed a more deductive approach. Taking into account that categories might not be exhaustive, we also aimed to include passages in the selected articles that described informal learning outcomes that did not fit one of the categories. However, none of the identified informal learning outcomes went beyond the predefined broader categories. Fourth, the data were analysed beyond the individual studies. All outcomes within each of the broader categories were analysed to find similarities and differences. Similar informal learning outcomes were clustered in classes. Classes are specific themes within the broader category. In doing so, we were able to synthesise the information in the individual studies with the goal to detect patterns and integrate the different findings (Post et al., 2019).

## RESULTS

The different informal learning outcomes found in the empirical literature are grouped in three broad categories. The first category concerns changes in knowledge, skills, and attitudes, with two classes: (1A) job-specific knowledge, skills, and attitudes, including specific knowledge, skills, and attitudes as well as general professional competence and proficiency; and (1B) more generic knowledge, skills, and attitudes that can be applied to other jobs. The second category concerns individual's and organizations' professional achievement as an outcome of informal work-related learning. These outcomes were further categorized into (2A) performance, (2B) changes in behaviour, (2C) understanding and navigating in the organization, and (2D) socio-emotional outcomes. The third category relates to sustaining a future development, with two classes namely, (3A) lifelong learning outcomes and (3B) career outcomes.

### CATEGORY 1: CHANGES IN KNOWLEDGE, SKILLS, OR ATTITUDES

#### Class 1A: Job-specific knowledge, skills, and attitudes

Learning is often aimed at increasing competence and proficiency in the current job. Studies come in three strands: comparatively many studies focused on the specific knowledge, skills, and/or attitudes acquired, while other studies have approached competence and proficiency in general terms or in terms of occupational expertise.

*Specific knowledge, skills, and attitudes* as an outcome of informal work-related learning activities has been

probed in studies among diverse jobholders: ten studies among teachers, two among nurses, two among managers, and one among hotel employees, elite footballers, and academic and non-academic university staff each. The general pattern of results is that informal work-related learning contributes to the acquirement of specific knowledge, skills, and attitudes, though the vast majority could be classified as skills. In addition, most of the knowledge and skills acquired are hands-on, while the attitudes are rather abstract.

Nine studies investigated the role of informal work-related learning in the development of knowledge. On a more general level, *work-related knowledge* was found as an outcome among both hotel employees and academic and non-academic employees (Doyle et al., 2012; van der Klink et al., 2012). On a more specific level, others indicated that informal work-related learning resulted in the acquirement of *subject knowledge* among teachers (Burns & Schaefer 2003; Henze et al., 2009; Lecat et al., 2019; Scribner, 1999) and improved *knowledge of technical nursing* among nurses (Berings et al., 2007; Berings et al., 2008). Additionally, Werner and Dickson (2018) found that elite footballers gained *knowledge of football techniques, general behaviour* (e.g., how to have an eye for other players) and *tactics/strategy* on the field through peer learning. Off the field, the knowledge acquired from teammates included *how to deal with media and fans* and *pressure*.

Eleven studies focused on the acquirement of specific skills. Studies among teachers reported that informal work-related learning facilitated general (Scribner, 1999) or instrumental (e.g., handling of discipline problems; Burns, 2008; Burns et al., 2005; Lecat et al., 2019) *pedagogical skills* and improved *classroom management strategies* (Burns 2008; Burns & Schaefer 2003; Burns et al., 2005; Henze et al., 2009; Kang & Cheng, 2014; Lecat et al., 2019; Scribner, 1999). Examples of the latter are: optimized teaching methods (Henze et al., 2009; Kang & Cheng, 2014; Lecat et al., 2019), the ability to use multimedia learning tools in presenting a lesson (Burns, 2008; Burns et al., 2005), the ability to control and maintain equipment, tools, and supplies in a vocational laboratory (Burns, 2008; Burns et al., 2005), preparation and planning (Burns & Schaefer, 2003), and the ability to maintain records and paperwork (Burns, 2008; Burns et al., 2005). Studies among nurses focused upon *technical-practical skills* which involve nursing skills, information transfer to patients, and information transfer to colleagues (Berings et al., 2007; Berings et al., 2008). Studies among managers focused upon a set of *managerial skills* and competences. This set ranged from three types of competences (namely, financial business management, process management, and socio-environmental management) in the work by Brandão et al. (2012) up to twenty in the work by Enos et al. (2003).



Finally, both van der Klink et al. (2012) and Doyle et al. (2012) found general *work-related skills* to be improved through informal work-related learning.

Six studies probed the role of informal work-related learning in the acquirement of specific attitudes. Studies among teachers report *changes in meta-cognitions* as potential outcomes of informal work-related learning: Teachers consider educational reform (Scribner, 1999) and might change their cognitions and conceptions of teaching (Hoekstra et al., 2009; Hoekstra & Korthagen, 2011; Kang & Cheng, 2014; Meirink et al., 2009). An illustration comes from Meirink et al. (2009): They found that some teachers became more resistant to the reform or did not change their cognitions concerning teaching and learning after engaging in informal learning. This result is in line with the observations of Hoekstra et al. (2009) and Hoekstra and Korthagen (2011), who found that the majority of teachers did not change their cognitions, even though they participated in informal work-related learning activities. Concerning academic and non-academic employees, van der Klink et al. (2012) found that about 7% of the job-specific outcomes were *attitudes*.

Seven studies probed an aggregate construct of competences, namely a general perception of competence yet related to the job or occupation (e.g., principal practice, nursing competence; Bickmore, 2012; Takase et al., 2015). The latter is why this was coded under job-specific knowledge, skills, and attitudes using the label *general professional competence and proficiency*. Crouse et al. (2011) showed that informal learning promoted the development of competences and Takase et al. (2018) found that workplace learning is a partial mediator between a set of personality–environment variables and self-rated nursing competence. The studies by Bickmore (2012), Osagie et al. (2018), Smith et al. (2006), and Takase et al. (2015) go one step further by looking into the effect of different kinds of informal learning activities on competence. The studies found that especially social informal activities are significantly and positively related with principal practice in the study of Bickmore (2012), Corporate Social Responsibility Competence in the study of Osagie et al. (2018) and social workers' self-perceived change in knowledge, attitudes, and behaviour in the study of Smith and colleagues (2006). Furthermore, Takase et al. (2015) found different relationships with self-reported competence among less and more experienced nurses. Finally, the study by Tannenbaum (1997) shows that the development of competence is conditional upon the source of learning: Respondents who assign a greater role of their learning to supervisors feel more competent than those who assign their learning to professional colleagues from other organizations.

A specific set of four additional studies focussed on *occupational expertise* as part of professional competences, as understood by van der Heijde and van

der Heijden (2006), namely the aggregate of knowledge, skills, metacognitive knowledge, social recognition, and growth and flexibility. The evidence as to which informal learning behaviours contribute to occupational expertise is, however, inconsistent (see the original papers for more information; Froehlich et al., 2014; Froehlich et al., 2019; Gerken et al., 2016; Lecat et al., 2018).

### **Class 1B: Generic knowledge, skills, and attitudes**

This category refers to the generic knowledge, skills, and attitudes that can be transferred across jobs and are not tied to a specific job or occupation. Five studies have probed multiple generic outcomes: general skills (including computer skills, administrative skills, and daring to communicate), task-management skills, coordinating tasks, physical coping, appearance, and a proactive attitude were found among nurses in the studies of Berings et al. (2007) and Berings et al. (2008). Additionally, both Crouse et al. (2011) and Werner and Dickson (2018) identified leadership skills as an outcome of informal work-related learning. Werner and Dickson (2018) further also found a can-do attitude among elite footballers. Finally, the study by van der Klink et al. (2012) suggests that transferable skills are an important outcome of informal work-related learning, at least among academic and non-academic staff: They identified 64 potential outcomes of informal work-related learning, of which 28 were generic and 21 very generic.

## **CATEGORY 2: INDIVIDUALS' AND ORGANIZATIONS' PROFESSIONAL ACHIEVEMENT**

### **Class 2A: Performance**

Nine studies probed the relationship between informal work-related learning and performance (Choi et al., 2020; Crouse et al., 2011; Doyle et al., 2012; Panagiotakopoulos, 2011; Park & Choi, 2016; Patterson et al., 2017; Wolfson et al., 2018; Wolfson et al., 2019; Yun et al., 2019). Three studies concluded that learning contributed to organizational performance/readiness and the development of a competitive advantage. They emphasized the possible effect of informal work-related learning on organizational outcomes (Crouse et al., 2011; Panagiotakopoulos, 2011; Patterson et al., 2017). Panagiotakopoulos (2011) argues that this is because informal work-related learning reduced employee errors in the production process, filled skill shortage needs, facilitated the introduction of new technology, and enhanced worker employability (cf. *infra*). Additionally, seven studies highlighted individual job performance as an outcome of informal work-related learning (Choi et al., 2020; Doyle et al., 2012; Park & Choi, 2016; Patterson et al., 2017; Wolfson et al., 2018; Wolfson et al., 2019; Yun et al., 2019). Park and Choi (2016) go one step further by identifying the employee's value of learning at work as a

mediator in the relationship between employees' informal work-related learning and job performance. Furthermore, Wolfson et al. (2018, 2019) found that informal work-related learning is related to changes in job performance but only in specific instances: The relationship was found to be positive in jobs that require greater updating and use of relevant information (Wolfson et al., 2019), in jobs with relatively low decision-making and problem-solving requirements (Wolfson et al., 2019), in the presence of a highly nonpunitive climate (Wolfson et al., 2018), and in the presence of poorly staffed units (Wolfson et al., 2018).

### **Class 2B: Changes in behaviour**

Five studies probed changes in professional (teacher) behaviour as a result of participating in informal work-related learning activities. More specifically, four studies found displaying or changes in professional teacher behaviour as a possible informal work-related learning outcome (Burns, 2008; Burns et al., 2005; Hoekstra et al., 2009; Hoekstra & Korthagen 2011). A possible drawback is that some teachers did not change their behaviour, although they participated in informal work-related learning (Hoekstra et al., 2009; Hoekstra & Korthagen 2011). Additionally, Lecat et al. (2018) found that informal learning affected teachers' innovative work behaviour in the form of idea promotion and idea realization.

### **Class 2C: Understanding and navigating in the organization**

This class refers to employees' optimal functioning within the broader context of one's organization, meaning that one is able to understand and navigate within the organization. Outcomes from nine studies fall in this class. Three studies focus on teachers informal work-related learning outcomes related to the broader school context, such as learning about the school's politics and power (Burns & Schaefer, 2003), understanding the underlying culture and membership (Kang & Cheng, 2014), and understanding students' lives and diverse cultures (Scribner, 1999). Role and environmental skills were mentioned among nurses, being able to perform multiple and changing strategic advisor roles among HRM practitioners and an improved understanding of the organization among hotel employees, respectively (Berings et al., 2007; Berings et al., 2008; Crouse et al., 2011; Doyle et al., 2012). Additionally, Yoon et al. (2018) found that informal learning contributed to employees' organizational commitment via self-efficacy. Finally, Tannenbaum (1997) showed that participants who attributed a greater percentage of their learning to supervisors believed that training would be seen more positively in their organization.

### **Class 2D: Socio-emotional outcomes**

Eleven informal work-related learning outcomes could be placed under this class. To illustrate, respect for

others and an improved understanding of others were found among elite footballers and hotel employees, respectively (Doyle et al., 2012; Werner & Dickson, 2018). Socio-emotional contact with patients, family and colleagues, personal/psychological coping (bringing perspective) and self-confidence were identified in the studies by Berings et al. (2007) and Berings et al. (2008). Improved self-confidence/efficacy was also highlighted in other studies with different samples (Crouse et al., 2011; Doyle et al., 2012; Henze et al., 2009; Patterson et al., 2017; Yoon et al., 2019). An increased passion about issues and needed changes was an outcome of informal work-related learning for HRM practitioners, making work interesting for hotel employees, and emotional well-being for teachers (Burns & Schaefer, 2003; Crouse et al., 2011; Doyle et al., 2012). Finally, Alonderienė (2010) identified job satisfaction and Tannenbaum (1997) found satisfaction with development as an outcome of informal learning. Concerning satisfaction with development, the source of learning matters (Tannenbaum, 1997): Participants who attributed a greater percentage of their learning to supervisors reported greater satisfaction with respect to their development, while individuals who relied to a greater extent on professional colleagues of other organizations reported less satisfaction with their development.

## **CATEGORY 3: SUSTAINING ONE'S FUTURE DEVELOPMENT**

### **Class 3A: Lifelong learning outcomes**

Five studies focused on (lifelong) learning skills. Developmental skills are found among nurses (Berings et al., 2007; Berings et al., 2008), HRM practitioners (i.e., a desire to learn, not getting stagnant, and being up to date; Crouse et al., 2011), and hotel employees (i.e., becoming better learners, and improvement of attitude about learning; Doyle et al., 2012). Additionally, developmental skills in the form of self-knowledge are found among nurses (Berings et al., 2007; Berings et al., 2008), HRM practitioners (i.e., improved understanding of oneself, giving a more complete and balanced perspective on things; Crouse et al., 2011), hotel employees (i.e., improved understanding of oneself; Doyle et al., 2012), and teachers (i.e., development of different sensibilities; Burns & Schaefer, 2003).

### **Class 3B: Career outcomes**

Three studies focused upon career development (Crouse et al., 2011; Doyle et al., 2012; Werner & Dickson 2018) and seven upon employability (Froehlich et al., 2014; Froehlich et al., 2015; Froehlich et al., 2019; Gerken et al., 2016; Kortsch et al., 2019; Lecat et al., 2018; Panagiotakopoulos, 2011). Five of those (Froehlich et al., 2014; Froehlich et al., 2015; Froehlich et al., 2019; Gerken et al., 2016; Lecat et al., 2018) focused on competence-based employability, as understood by van der Heijde

and van der Heijden (2005); namely the continuously fulfilling, acquiring, or creating of work through the optimal use of competences. Competence-based employability combines domain-specific occupational expertise (cf. *supra*) with four more generic competencies: (1) anticipation and optimization, (2) personal flexibility, (3) corporate sense, and (4) balance (van der Heijden et al., 2009). The results are largely consistent. Informal work-related learning related positively to anticipation and optimization and to personal flexibility in all five studies, although it should be noted that Lecat et al. (2018) also found a negative relationship between help use and anticipation/optimization. Both corporate sense and balance were found in three studies (Froehlich et al., 2015; Froehlich et al., 2019; Lecat et al., 2018). Here too, it should be mentioned that a negative relationship was found between feedback frequency and balance in the study of Lecat et al. (2018). The sixth study concerning employability was conducted by Panagiotakopoulos (2011): His interviews among small and micro firm owners showed that informal work-related learning enhanced their employees' employability. This, in turn, may have a positive impact on firm performance through job security and raised morale. Finally, Kortsch et al. (2019) found that employees who frequently used informal learning strategies have higher internal marketability/employability values.

## DISCUSSION

This paper aimed to provide a systematic literature review of the current empirical research on informal work-related learning outcomes. The outcomes were divided into (1) changes in knowledge, skills, and attitudes, (2) individuals' and organizations' professional achievement, and (3) sustaining future development. Most existing classifications focus on the first category (i.e., knowledge, skills, and attitudes), while less attention is paid to the second and third category (i.e., professional achievement and/or future development). The classification in this study goes beyond identifying knowledge, skills, and attitudes, and provides a broader account in line with the core outcomes in the definition of informal work-related learning. From our review, we draw four conclusions.

First, this study was able to contradict the initial idea that informal work-related learning outcomes are only tied to the specific job (Eraut, 2004): The informal work-related learning outcomes were diverse along different dimensions, going from hands-on to abstract, short-term to long-term, and applicable to the current job only or across jobs.

Our review, for example, showed that informal work-related learning contributed to highly specific outcomes, such as technical nursing skills (Berings et al.,

2007; Berings et al., 2008), as well as to more general outcomes, such as personal career development (Crouse et al., 2011). Note that these dimensions are intertwined: Outcomes that are hands-on are often also focussed upon the relatively short-term and applicable to one's current job. Likewise, abstract outcomes are often more long-term and applicable to a broader context. The diversity of the outcomes found in this review seem to suggest that almost anything could be learned through informal work-related learning (Tynjälä, 2008).

A second conclusion is that the vast majority of informal work-related learning outcomes included in the manuscript are focussed upon the individual, while comparatively few outcomes focus upon organizational outcomes. Yet, the definition of informal work-related learning outcomes explicitly refers to organizations' present and future functioning (Matthews, 1999). Informal learning is often seen as steered by the individual, with no or little involvement from the organization. This aligns with the idea that self-directedness became more central in organizations (e.g., Ellinger, 2004). As research into informal learning outcomes is relatively new, it is arguable that researchers mainly focussed on what seems logic: As learning is mostly viewed as individual process, it seems logical that researchers focussed on individual outcomes. Moreover, this review study included primary studies that took an individual perspective on informal learning. While we did include studies that focused on learning from others, we did not include studies with an exclusive focus on collective learning, such as team learning. A plausible assumption is that those studies are more focused on outcomes at the organization level (e.g., Van der Haar et al., 2013).

A third conclusion is that informal work-related learning outcomes have been studied in diverse professions, including teachers, nurses, managers, HRM practitioners, faculty staff members, and so on. However, most studies in this review study focused on one specific profession in particular, making single studies occupation-specific. Teachers especially were overrepresented within this systematic review, with only teacher samples in 11 out of the selected 39 studies. The second most researched profession were nurses, with 5 out of the selected 39 studies. The overrepresentation of teachers and, to a lesser extent, nurses, might be somewhat surprising as both professions work in highly structured contexts, while informal learning is considered to occur rather unstructured (Lohman, 2006). At the same time, these professions strongly rely on interindividual contacts, namely pupils for teachers, and patients for nurses. These contacts form the basis for multiple and daily interactions, which creates opportunities for informal learning (Billett, 2018). This systematic literature review was able to integrate the results across different professions, including the identified occupation-specific

outcomes. By mapping which results were obtained in which professions, the systematic review study can be used as a starting point for future researchers to select outcomes, avoiding the risk of fragmentation inherent to literature focusing on one sole profession or target group.

A final conclusion is that informal work-related learning in almost all studies led to desirable outcomes. This is less evident than it may seem, given that informal work-related learning is often unstructured and uncontrollable (Lohman, 2006), giving way to learning bad habits (Kyndt et al., 2014; Tynjälä, 2008). Exceptions are the studies of Hoekstra and colleagues (2009), Hoekstra and Korthagen (2011), and Meirinck et al. (2009). One possible reason for finding only a few negative informal work-related learning outcomes is that some researchers define learning as contributing to desirable changes in knowledge, skills, and/or attitudes. As a result, one would argue that if an outcome is negative or undesirable, no learning is taking place. Another reason can be found in the way we defined informal learning and more specifically our focus on intentional learning: Recent studies have stressed the need to focus on learning from errors (Bolander Laksov & McGrath, 2020), which is gradually attracting more attention in the field (Horvath et al., 2021). A learning process that arose from an error might yield differential outcomes that can be negative (or at least unpleasant) in the short-term, whilst generating positive outcomes later in time (Gartmeier & Schüttelkopf, 2012).

## LIMITATIONS

Although the study has been conducted with great conscientiousness, the following limitations need to be recognized. First, a systematic literature review aims to bring together what is known about a specific topic area (Grant & Booth, 2009), in this case the outcomes associated with informal work-related learning behaviour. And yet, some studies may fall between the cracks. The inclusion criteria that guided the selection of studies, the search terms used, or the selected databases, for example, could influence the results.

Second, this review exclusively focuses on the outcomes associated with informal work-related learning behaviours, while in fact formal and informal learning intersect at work (Billett, 2004). For example, Colley et al. (2002) argue that almost every learning situation entails

to some extent aspects of both formal and informal learning. Contrary to what this review might suggest, formal and informal learning are not easily distinguished, and attention should be paid to the intersection between formal and informal learning (e.g., Tynjälä, 2008).

Third, the first author carried out the selection of the literature, without double check or further validation. Reasons were related to time-constraints.

Fourth, we acknowledge that our search is limited through the exclusion of Academic Search Elite and Business Source Premier for the second search and the exclusion of Academic Search Elite, Business Source Premier, and EconLit for the third search.

Finally, we are well aware that there are certain biases in peer review (Lee et al., 2013) such as confirmation bias and publication bias, and this may have affected the results. The authors chose to focus on published studies in peer-reviewed journals because it is often difficult to retrieve unpublished work and so that researchers can easily replicate our search in the future.

## DIRECTIONS FOR FUTURE RESEARCH

Based on the informal work-related learning outcomes found, we propose six possible avenues for future research. Our first suggestion is to promote research into the outcomes of informal work-related learning, with a specific focus upon organizational and potential negative outcomes. Research on informal work-related learning is flourishing, with 49% of the studies in this review published from 2014 onwards. However, studies mainly focused on individual and positive outcomes, while more insight is needed on possible organizational or negative outcomes. Following on from this, [Table 2](#) proposes some interesting research questions for future research.

With the first suggestion in mind, the second suggestion for future research is to identify potential mediators and moderators in the relationship between informal work-related learning and outcomes. For example, outcomes at the organizational level are quite distant from participation in informal work-related learning, and the effects may be mediated by more proximal outcomes (i.e., individual outcomes). By adding mediators to the research model, we may gain additional insight into how informal learning is related to more distal outcomes, such as organizational outcomes (e.g.,

1.	What is the relationship between informal work-related learning and leaving the organization (turnover)?
2.	Does informal work-related learning affect employees' presenteeism?
3.	Which informal learning activities are important for developing verbal and/or written communication skills? Does it apply to different occupations?
4.	What is the influence of informal work-related learning on developing problem-solving skills? Is it generalizable to different occupations?
5.	How does informal work-related learning contribute to a supervisor's leadership style?

**Table 2** Possible Future Research Questions.



Ellström, 2001). In addition, Wolfson et al. (2018, 2019) found that the relationship from informal learning to job performance is contingent on several factors, suggesting that informal learning may not always be positive or valuable. By bringing in moderators in the future, we may better understand how and when informal work-related learning results in positive outcomes.

A third avenue for future research refers to a further refinement of the conceptualization of informal work-related learning. We observed that studies sometimes use the term informal work-related learning to refer to the antecedents (i.e., learning conditions, such as learning value of the job) as well as to learning behaviours of informal work-related learning (Kyndt et al., 2016). This may cause conceptual confusion. Future research could greatly benefit from a stronger conceptual account, for example along a process from antecedents to different learning behaviours and, ultimately, learning outcomes (Kyndt et al., 2016).

Our fourth suggestion concerns measuring informal work-related learning. Most studies in this review were based on self-reports (e.g., survey, interview; see Appendix for details per study). While self-reports are certainly valuable, including other sources could add further meaning. Our suggestion for future research would be to supplement self-reports with other-reports or observations: While other-reports can be particularly helpful in capturing the interindividual nature of some learning behaviours, observations can be useful to understand how individuals behave to learn. Observations also have the potential to go beyond intentional or consciously undertaken learning activities (e.g., Collin, 2002). This unintentional and/or unconscious learning would be very helpful in advancing the field: While often theorized (Eraut, 2000), empirical research is currently lacking because of the intangibility of this learning.

Our fifth avenue for potential research relates to the samples used. The vast majority of research into informal work-related learning outcomes was conducted in homogeneous samples (i.e., teachers, nurses, etc.). This helps to understand occupation-specific outcomes but limits possibilities for generalization and integration (Kyndt et al., 2016). Therefore, future studies could use a more diverse sample or replicate its studies among other professions. This could help to identify possible outcomes that are relevant to a variety of occupations, such as communication or leadership skills (Kyndt et al., 2014).

Our final suggestion concerns research design. More specifically, most of the studies in this review adopted a cross-sectional design, with obvious limitation in terms of causality. For example, increased feeling of competence was an outcome of informal work-related learning in this review, and an antecedent of learning in the study by Doornbos et al. (2008). Moreover, informal learning outcomes are inherently defined as changes in

knowledge, skills, attitudes, professional achievement, or development (Doyle et al., 2012). These changes are not adequately captured when using a cross-sectional design. Therefore, longitudinal studies are highly warranted.

## IMPLICATIONS FOR PRACTICE

Implications for practice are twofold. First, informal work-related learning pays off in various settings, even in highly structured work environments. Our second implication concerns the shared responsibility of individuals and organizations for informal work-related learning. It is often assumed that the learner is in control over informal work-related learning (Kyndt & Baert, 2013) and our review shows that predominantly outcomes at the individual level were heavily studied. A potential risk may be that informal work-related learning is seen as an individual responsibility in line with a strong focus on agency in organizations (e.g., Ellström, 2001). However, different aspects in our systematic literature review show that individuals, together with organizations, have an active role: Our review demonstrates, for example, that informal work-related learning contributes to skills related to a sustainable development and career.

## ADDITIONAL FILE

The additional file for this article can be found as follows:

- **Appendices.** Tables A1 to A4. DOI: <https://doi.org/10.16993/sjwop.151.s1>

## COMPETING INTERESTS

The authors have no competing interests to declare.

## AUTHOR CONTRIBUTIONS

Kelly Smet performed the literature search and selection of articles. In case of doubt, she consulted with the other authors until agreement was reached. Kelly Smet also took the lead in writing the manuscript with support from Ilke Grosemans and Nele De Cuyper. Kelly Smet, Ilke Grosemans, Nele De Cuyper, and Eva Kyndt discussed and interpreted the results and provided critical feedback.

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