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What is informal workplace learning: a qualitative meta-synthesis

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Abstract

Purpose – The purpose of this study was to provide a model for informal workplace learning. Despite the prevalence and recognized importance of informal learning in the workplace, scattered literature and different perspectives have caused a lack of shared understanding about its nature, and little research effort has been made in this direction so far.

Design/methodology/approach – This paper identified the most significant components of informal workplace learning using the qualitative meta-synthesis method. For this purpose, after searching sources from different databases and screening them, 17 sources were selected due to compatibility with the research criteria. The texts extracted from the sources were analyzed using a thematic analysis method and synthesized using an aggregation approach. Finally, a themes network was created as a model with 8 main components and 11 sub-components.

Findings – The results indicated that eight components were considered significant to informal workplace learning, including learning stimulus, awareness and intent to learn, action or experience, critical reflection on action, facilitators, collective learning, self-directed and context.

Originality/value – This meta-synthesis contributes to the coherence and integration of the informal workplace learning literature. The obtained conceptual model, in addition to the general components of informal workplace learning, provides an explanation of the characteristics of each and the relationships between its components to achieve a complete understanding of the nature of informal workplace learning. Since no study has been done so far to comprehensively identify the most significant components of informal workplace learning, it is not possible to refer to their results in comparison with the results of this study.

Keywords Qualitative, Informal learning, Workplace learning

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Informal learning has grown in importance as a vital component of lifelong learning and as a means of addressing the challenges of a fast-changing world (Park *et al.*, 2021). Individuals' ongoing professional development increasingly depends on informal learning. (Rehm *et al.*, 2018). 70%–90% of workplace learning is informal (Cerasoli *et al.*, 2018; Touré *et al.*, 2017; Daniels, 2013; Cunningham and Hillier, 2013; Eraut, 2011). These figures show that informal learning can be more inclusive, effective and significant than formal learning (Hager, 2004). Marsick and Volpe (1999) said it well, "Organizations are regarding formal training programs as only one learning tool and are acknowledging that informal learning has always been the most pervasive type of learning in the workplace" (p. 3).

Potential benefits of informal learning in the workplace include:

- simulating a natural and self-directed experience;
- continuous performance improvement;
- creating intrinsic motivation for learning;
- creating learning opportunities in any situation (Van Noy *et al.*, 2016);
- being less expensive and more efficient;
- having less employee resistance (Radakovic and Antonijevic, 2013);
- connecting with the individual needs of employees;
- instant transfer of learning; being just in time (Matthews, 2013);
- spending less time; and
- helping to cope with constant changes in the work environment (van Rijn, 2014); etc.

Formal training is the most visible aspect of workplace learning (Jacobs and Park, 2009). However, workplace learning is mainly informal (Marsick and Watkins, 1990), to the extent that some authors refer to informal learning as learning on the job (Schulz and Roßnagel, 2010). However, these two concepts each have their own definitions and scope, which are mentioned below.

There are three different types of informal learning:

(1) nonformal learning;
(2) informal learning; and
(3) incidental learning.

Nonformal learning exists between formal and informal learning (Lange and Costley, 2015) and contains elements of both (Eraut, 2000). Incidental learning is a type of learning that is obtained unintentionally as a byproduct of doing other activities (Marsick and Watkins, 1990). After an incidental start, the informal learning activities are transformed and become intentional in the same way as the gap-bridging process (Sjöberg and Holmgren, 2021). Our focus in this study is on informal learning in the workplace. While some definitions of informal learning emphasize its contrast with formal learning (Driscoll and Carliner, 2005), others eliminate the dichotomy between these concepts and focus on the implicit, unintended and unstructured characteristics of informal learning that are on the informal end of the continuum (Eraut, 2004). The lines dividing formal and informal can be hard to discern even at a structural level (Dron and Anderson, 2022). Billett (2004) claims that formal and informal learning can happen together in any context and can be better understood by examining their relationships instead of their differences. The terms used to describe informal learning primarily refer to aspects that are positively coded, like spontaneous, casual, holistic and democratic (Viberg *et al.*, 2021). Workplace learning is also a field in which many different related and partly overlapping terms

have been developed or are routinely used, such as lifelong learning, workplace learning, working life learning, organizational learning and the learning organization (Chisholm *et al.*, 2007, p. 21). Workplace learning can be defined as the acquisition of knowledge or skills by formal or informal means that occurs in the workplace (Cacciattolo, 2015, p. 243). Most of the research on informal learning has also been related to learning in the workplace (Eraut, 2004). This means that informal learning occurs in the workplace, in everyday work, when people are faced with tasks or problems to be solved (Manuti *et al.*, 2015). According to Cofer (2000) and Lohman (2000), informal workplace learning is defined as an aspect of workplace learning that specifically involves those learning activities that employees initiate in the workplace, involve the expenditure of physical, cognitive or emotional effort, and result in the development of professional knowledge and skills (Lohman, 2005, p. 503).

Regardless of how these concepts are defined, understanding the most significant components of informal learning in the workplace is essential to increasing its effectiveness. Most of the research identified informal learning components in the workplace in three general categories:

(1) personal factors (Kyndt *et al.*, 2018; Schürmann and Beausaert, 2016; Cerasoli *et al.*, 2018);

(2) organizational factors and work environment (Schürmann and Beausaert, 2016; Cerasoli *et al.*, 2018; Ellinger, 2005); and

(3) job characteristics (Kyndt *et al.*, 2018; Gerards *et al.*, 2020); Jeon and Kim, 2012).

Despite the recognized importance and prevalence of informal learning in the workplace, little research has been conducted to comprehensively identify its most significant components. The most significant components are not merely the factors that influence informal workplace learning, but also those that are considered essential for its occurrence and effectiveness. Factors affecting informal learning are not necessarily the most important components. For example, if culture is one of the factors influencing informal learning, it is not necessarily critical for informal learning to occur. In contrast, other researchers have focused on factors affecting informal learning. Skule (2004) developed a framework that included seven learning conditions that affect informal learning in the workplace. They include:

(1) being subject to a high degree of change;

(2) a high degree of exposure to demands;

(3) managerial responsibilities;

(4) extensive professional interactions;

(5) superior feedback;

(6) manager support for learning; and

(7) rewarding to skill.

In a review study, Jacobs and Park (2009) present the conceptual framework of workplace learning consisting of the interaction of three variables:

(1) the place of learning;

(2) the extent of planning to develop and deliver learning experiences; and

(3) the role of the instructor, facilitator or others during the learning process.

Kyndt *et al.* (2018) in investigating the factors affecting informal learning in a meta-combination method, placed them under three general categories:

(1) personal characteristics;
(2) work environment factors; and
(3) job characteristics.

The results of Janssens *et al*. (2017) research to investigate the relationship between informal workplace learning conditions and its results, showed that the learning conditions of "information," "feedback," "reflection" and "coaching" are good predictors for obtaining learning results. Schürmann and Beausaert (2016) conducted a research with the aim of investigating the motivating factors of informal learning. They found that organizational motivations, task and work motivations, personal motivations and formal learning affect the informal learning of employees. On the contrary, contextual characteristics do not affect informal learning. The purpose of Ellinger's (2005) research was to discover the influencing factors of the organizational context in the work environment on the informal learning of employees. The results showed that committed leadership and management to learning, Also, committed internal culture to learning, work tools and resources, and people who form learning communication networks are known as positive influencing factors on informal learning. Jeong *et al*. (2018) conducted a study using an integrated literature review based on 55 sources. The results showed that the factors affecting informal learning are classified into three levels:

(1) individual;
(2) group; and
(3) organizational.

Determinants at the individual level, demographic characteristics, personal characteristics and job characteristics, at the group level, leadership support, feedback, networking and interpersonal relationships, and the organizational level, organizational characteristics, organizational interventions, organizational culture and work tools and resources.

Sometimes it is said that this type of learning is not effective, with limitations that are often attributed to its unstructured nature (Jaziri-Bouagina and Jamil, 2017). However, informal learning has limitations, many of which stem from its unstructured nature (Cerasoli *et al.*, 2018), including the fact that it is difficult to detect the occurrence of informal learning due to its invisibility, and this makes it difficult to manage or evaluate its effectiveness (Jaziri-Bouagina and Jamil, 2017); A person only learns part of a task or superficial skills that may not be transferable, or bad habits or wrong lessons may also be learned (Bell, 1999). The lack of access to authentic activities and the lack of a path to organize guided experiences may not provide the best opportunity to provide appropriate knowledge and skills. In addition, the issue of access to inappropriate and undesirable knowledge (Billett, 1995) and control of knowledge in the workplace is also raised (Spencer, 2001). Also, the lack of goals and specific curriculum can lead to unwanted and undesirable results, which are sometimes different from the organization's expectations (Billett, 2004). Therefore, overcoming these limitations can increase the effectiveness of this type of learning. To overcome them, it seems necessary to identify the most important components of informal learning in the first step. Because by indirect intervention in its most important components, the mentioned limitations can be reduced. Therefore, by identifying these components, steps can be taken to better recognize informal learning and make it more effective in the workplace. Different views and models can be seen in the field of informal learning. The model of Marsick and Watkins (1990) describes informal learning as a problem-solving process that also considers

the importance of the influence of context. Eraut's informal learning model (Eraut, 2007) considers the factors affecting informal learning under learning factors and contextual factors. The informal learning typology model (Schugurensky, 2000) conceptualizes informal learning into four types:

(1) self-directed;
(2) random;
(3) implicit; and
(4) integrated (Bennett, 2012).

The dynamic model of informal learning (Tannenbaum *et al.*, 2009) also describes the informal learning process through four components, including experience or action, feedback, reflection and learning intention (Decius *et al.*, 2019). Of these, only the dynamic model of informal learning explicitly describes the components of informal learning. Other models have tried to depict the nature of this type of learning by addressing the types of informal learning and the factors affecting it or comparing it with the problem-solving process. Therefore, because the existing literature in this field refers to informal learning from different angles, we are faced with conceptual dispersion.

This meta-synthesis can help integrate the literature to clarify the nature of informal workplace learning. The result of this study can be used to gain a general understanding of informal learning in the workplace, identify what it is, providing more opportunities for informal learning, and making it more structured. Also, the relationships between its most important components can contribute to the overall understanding of informal learning because the whole is greater than its parts. Among the informal learning models, only the dynamic learning model describes a complete informal learning process. Experience/action means that the working person engages in an action for a work task. Then feedback is a confirmation that the employee receives according to a previous action. Reflection means that a person engages in thoughtful consideration of his past and future actions. Intention to learn means to be aware of the need for self-development and progress in the work environment and to acquire more work-related knowledge. The learner can return to an action or learning experience and the cycle continues. Therefore, in this research, based on the findings, the relationships between the most important components of informal learning are determined.

The purpose of this paper is to review various sources, studies and models in the field of informal workplace learning using a qualitative meta-synthesis method to identify the most significant components of informal workplace learning. Therefore, the research is guided by the following question:

Q1. What are the most significant components of informal workplace learning?

Method

In this research, the qualitative meta-synthesis method was used. "Qualitative research synthesis refers to a process and product of scientific inquiry aimed at systematically reviewing and formally integrating the findings in reports of completed qualitative studies" (Sandelowski and Barroso, 2006). Though not all sources in this research are qualitative studies, conceptual framework sources were included when written by experts in the field with experience working in informal workplace learning. We used the meta-synthesis approach recommended by Sandelowski and Barroso (2006) through the following steps.

Formulating the purpose and rationale

As Sandelowski and Barroso (2006) state:

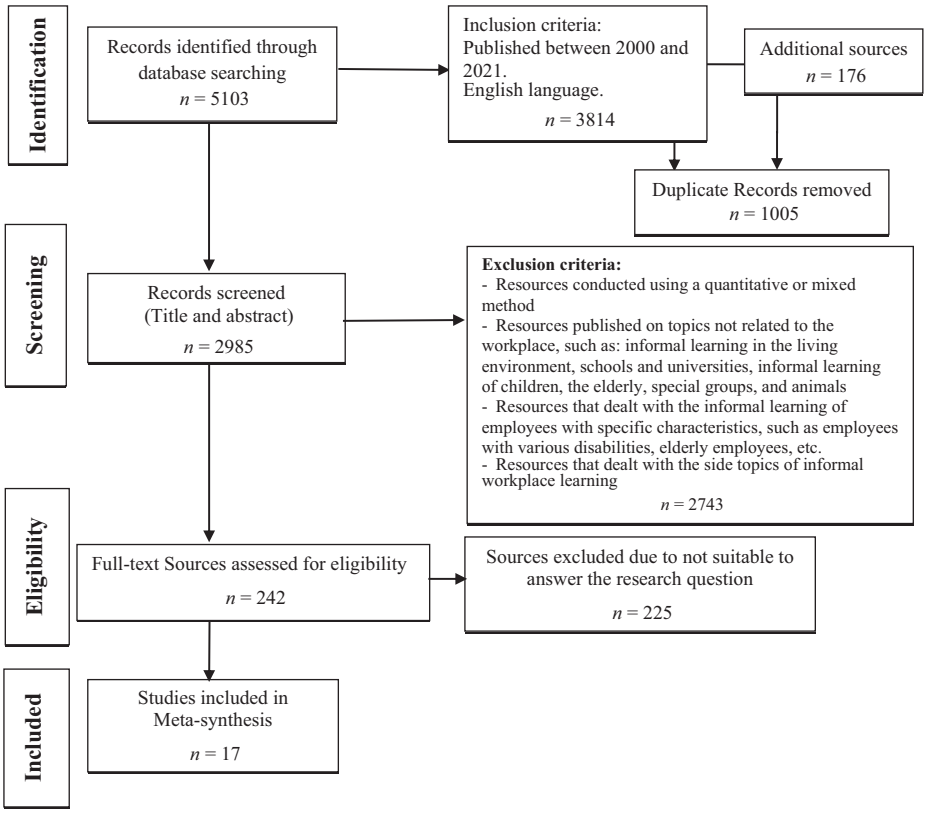
> A common purpose of a research synthesis study is to sum up the knowledge generated in an area in order to draw conclusions directly relevant to practice or chart directions for future research.

This research aimed to determine the most significant components of informal workplace learning.

Searching and retrieving qualitative research

Searched sources included articles (scientific papers, reviews, and conference papers), books, and book chapters. We used the keywords, "informal learning," "workplace learning," "learning in the workplace" and "learning at work" to search for resources. The reason for searching for the term "informal learning" was that there are some resources that, although they only mention this keyword in their title, their content covers informal learning in the workplace (such as A1, A6 and A9). Of course, the exclusion criteria caused the removal of sources related to informal learning outside the workplace, and this guarantees the validity of the relevant sources in the study. We searched the Web of Science, Scopus, Springer, Google scholar, Science Direct, Eric, Emerald and Taylor and Francis databases. This initial search was limited to the titles of the sources because the most significant components of informal workplace learning are found in sources that directly address this type of learning and have the searched keywords in their titles. Due to the large number of unrelated sources in two databases, additional filtering was considered. The names of the most famous experts in this field (Victoria J. Marsick, Karen E. Watkins, Michael Eraut and Stephen Billett) were also searched for in the Google Scholar database. Also, in the Scopus database, the results were limited to subject areas (social sciences, business, management, and accounting, psychology, humanities, art, multidisciplinary and decision-making sciences) only in the first two keywords. The search was completed by the end of December 2021, with 5103 sources identified. Additional selection criteria were applied and 3,814 sources were selected based on two characteristics: publication date between 2000 and 2021; and English language. In addition, 176 sources written between 1990 and 1999 by experts in this field (whose names were mentioned earlier) were identified as additional sources by referring to their academic pages or Research Gate. Then 1,005 duplicate sources were removed, and 2985 sources entered the screening cycle. At this stage, the sources' titles and abstracts were reviewed, and inappropriate cases were excluded from the study. The exclusion criteria were: sources conducted using a quantitative or mixed research method, as well as sources published in fields unrelated to the purpose of the study were excluded. Unrelated fields include nonformal learning outside of the work environment, such as the living environment, schools and universities; informal learning of children, the elderly, special groups and animals; employees with special characteristics, such as employees with various disabilities and elderly employees, etc.; and side topics to informal learning in the workplace. Since our target concept in this research was informal learning in the workplace in its general sense, sources that dealt with other concepts such as those mentioned were excluded due to biased research results. A total of 2,743 sources were removed in this way, and the remaining 242 sources were studied in full text.

At this stage, 225 sources were deemed inappropriate due to a lack of suitable response to the research question. Finally, 17 sources were included in the meta-synthesis. Figure 1 shows the process of searching and selecting resources in the four stages of the PRISMA flowchart.



Source: Authors' own creation

Figure 1. PRISMA flowchart of search and selection of sources

Quality appraisal

As research reports enter into a synthesis study, both individual (intra-report) and comparative (inter-report) appraisals are initiated (Sandelowski and Barroso, 2006). For this purpose, the sources were examined again in terms of entry and exit criteria during the full text review stage. This process also ensured that there was no need to modify the criteria further. Because the sources were found in highly reputable scientific databases, the reviewed sources were assumed to be of high quality. Of the 17 sources that were finally included in the meta-synthesis, 10 are sources written by experts in the field of informal workplace learning. In the comparative evaluation, the content of the sources was compared, and the sources with similar and repetitive content from special authors were removed. Finally, each resource was assigned a code from A1 to A17. Descriptive information has been extracted according to Table 1.

Analysis and synthesis

The findings were analyzed and categorized using the thematic analysis method. Data analysis and classification was done by three researcher from the research team. At this point,

Table 1. Sources included in the qualitative meta-synthesis

Row	Authors (year)	Type	Purpose	Method
A1	Marsick and Neaman (2018)	Book chapter	- Providing definitions, models and examples of informal adult learning based on theories of learning from experience - Discussing transformative dimensions of informal learning - Identifying environmental supports and barriers	–
A2	Marsick *et al.* (2008)	Book chapter	Rethinking the informal learning model of Marsick and Watkins (1990)	–
A3	Marsick and Watkins (2001)	Book chapter	Providing a theory of informal and incidental learning and updating this theory based on recent research	–
A4	Eraut (2011)	Journal article	Understanding the role of informal learning in the workplace	Based on two research projects (qualitative interviews)
A5	Carliner (2017)	Book chapter	Providing an explanation of informal learning	–
A6	Tannenbaum *et al.* (2009)	Book chapter	- To consider the role of unstructured, unsystematic, informal learning that occurs on the job - Developing a conceptual framework focusing on the individual and the organization in an effort to identify how informal learning can be better shaped, leveraged and utilized by organizations	–
A7	Steinert (2014)	Book chapter	To highlight the role that learning from experience can play in the development of health professionals	–
A8	Boud and Rooney (2018)	Book chapter	Putting up discussion of informal learning as part of everyday working life	–
A9	Collin (2006)	Journal article	Investigating design engineers' and product developers' learning through their work	Ethnographic
A10	Schei and Nerbø (2015)	Journal article	Identifying activities that lead to informal learning, conditions that promote or prevent such learning, and differences between two groups of employees (preschool teachers and assistants)	Qualitative case-study

(*continued*)

Table 1. Continued

Row	Authors (year)	Type	Purpose	Method
A11	Ellström (2001)	Journal article	Explaining the integration of learning and work through the two concepts of adaptive and developmental learning	Review
A12	Rogers (2014)	Book	- Providing diverse options for structuring informal learning and its Sub-forms - Focusing on the characteristics of informal learning	–
A13	Marsick and Volpe (1999)	Book chapter	Sharing how to enhance informal learning	–
A14	Billett (2000)	Book chapter	- Promoting understanding of learning as part of everyday thinking and practice - Examining the strengths and limitations of learning in work environments - Presenting a model of organizing learning for the workplace	–
A15	Billett (1996)	Journal article	Providing an initial model of a workplace learning curriculum	Review
A16	Gola (2009)	Journal article	Investigating informal learning processes of social workers	Grounded theory and inquiry into narrative
A17	Marsick and Watkins (1990)	Book		–

Source: Authors' own creation

every part of the sources that contained potential content to answer the research question – provided that the material contained therein was original – was analyzed. Although most of the sources were theoretical sources. Where a qualitative research was conducted, we used its conceptual literature. As a result, the results of qualitative studies based on different context were not used in this research. First, the sources' content was actively read, and the desired parts for coding were identified. In the next step, coding was done and 243 initial codes were created. Next, we examined the relationships between the codes and some codes were removed and, if necessary, sub-themes were also created under the main themes. The themes were reviewed to make necessary corrections to remove, merge, or separate them. Furthermore, all extracted texts were re-read for each theme by the individuals who did the coding to ensure consistency of the pattern of the theme. All relevant texts in the sources were coded by the first author. The second author revised the coding by removing the code duplicates and discussing the codes. Then all authors organized the codes and discussed their organization to identify most significant component of informal workplace learning.

The thematic analysis method used to analyze and classify the findings resulted in 13 main themes and 11 sub-themes (see Table 2).

In a meta-synthesis, after categorizing the findings and comparing them together, it is decided whether they combine with aggregation or configuration. In synthesis by aggregation, findings that confirm each other are merged or summarized (Sandelowski and Barroso, 2012). The lack of conflicting results at this point in the study made it easier to integrate or summarize them. Therefore, the synthesis by aggregation approach was followed, and finally, the themes network was created.

Validity

The most important factor increasing the validity of synthesis research is not the standardization of judgments, but rather the explanation of many judgments required to conduct these studies (Sandelowski and Barroso, 2006). However, several strategies to increase validity in qualitative studies that are also recommended in research synthesis were employed. To ensure the comprehensiveness of the search and the validity of the sources, various keywords were used to search in valid databases. The search results were evaluated in several stages according to the research criteria, and the final sources of information were extracted and described. Audit trail maintenance was used to ensure valid procedures and results. To increase the theoretical and practical validity, the expert peer debriefing method was used, whereby the search and screening of sources, thematic analysis and study results were reviewed and criticized by three expert members of the research team. Peer debriefing is the process of consulting with one or more peers to enhance the validity of research. It involves allowing a qualified colleague to review and assess your transcripts, methodology and findings. Qualitative researchers use this technique to probe their process to establish credibility in their research.

Result

After categorizing the results and comparing them with one another, the results were synthesized using the aggregation approach, and finally, the themes network was created in Figure 2. Because there were no conflicting results, the synthesis by aggregation approach was used to attempt to integrate the findings that confirmed each other or had some similarity. The reason why the main and sub-themes in Table 2 do not match with the main and sub-categories in Figure 2 is that changes have been made in the synthesis stage. For example, according to the definitions, explanations, and examples mentioned for the components of real-life activities, understanding a new experience, and trial and error, it was found that

Table 2. Thematic analysis coding schemes

Themes	Sub-themes	Codes	Studies
Action or experience		Learning through action	A2, A6, A12, A13, A14, A15, A17
		Practice	A1, A9, A16
Critical reflection on action		Critical reflection	A2, A3, A13, A17
		Reflection on action	A1, A2, A6, A7, A10, A11, A14, A15, A16, A17
Real-life activities		Real-life activities	A2, A3, A7, A8, A9, A12, A13, A14, A15
		Life experience	A1, A3, A5, A15, A17
		Everyday real tasks	A1
	Process-oriented activities	Access to process of activities	A15, A9, A15
	Goal-directed activities	Goal-directed activities	A1, A15
		Access to goals of activities	A15, A15
	Increasing complexity and responsibility in the sequence	Sequence based on learner mastery	A14
		Increasing complexity and responsibility in the sequence of activities	A14, A15
Guidance		Guidance	A9
		Direct guidance	A14, A15
		Indirect guidance	A14, A15
		Guided participation	A7, A14, A15
Awareness and intent to learn		Learner awareness	A2, A3, A6, A10, A13, A16, A17
		Learner attention	A2, A17
		Recognizing informal learning	A5
		Intentional	A1, A3, A6
Trial and error		Trial and error	A1, A4, A5, A10, A13
		Learning from mistakes	A1, A4, A6, A16
Collective learning	Interaction and learning from others	Learning from peers	A7, A16
		Learning from more experienced person	A10
		Learning from others	A9, A12
		Social learning	A1, A5, A12, A17
		Group participation	A4
		Collective learning	A2, A14, A17
		Discussion with others	A7, A10
		Interaction with others	A8, A9, A14, A17
		Consultation	A4, A10
	Modeling	Modeling	A15
		Modeling from peers	A7
		Observing others	A2, A7, A10
		Peer observation	A4
		Modeling by leaders	A5
	Collaboration	Collaboration with others	A13
		Cooperation with others	A9
		Peer collaboration	A1
Learning stimulus	Unusual conditions	New challenge	A1, A2, A3, A4, A8, A13, A15, A17
		New changes	A8
		New problem	A3, A13

(*continued*)

Table 2. Continued

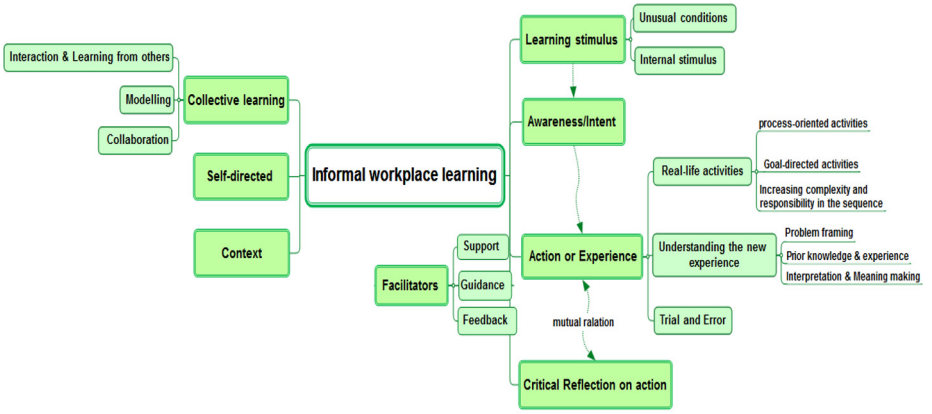
Themes	Sub-themes	Codes	Studies
		New experiences	A13
		New needs	A1, A3, A13
		Creating learning opportunities	A2
		Nonroutine conditions	A17
		External stimulus	A3, A13
	Internal stimulus	Internal stimulus	A1, A3, A13
Understanding the new experience	Problem framing	Problem framing	A2, A3, A17
	Prior knowledge and experience	Using prior knowledge	A1, A2
		Using prior experience	A3, A9, A12
		Previous learning	A11
	Interpretation and meaning making	Learner's interpretation	A1, A16
		Meaning making	A3
		Interpretation of context	A2, A3
Feedback		Supervisor feedback	A2
		Feedback	A4, A11
		Feedback from others	A6
		Feedback from work	A6
		Peer feedback	A2, A4
Support		Support	A4
		Learning professionals support	A5
		Mentors support	A1
		Others support	A1
		Organizational support	A7
		Supervisor support	A5, A6
Self-directed learning		Learner freedom	A13
		Learner independence	A10
		Learner centered	A3
		Learner responsibility	A10
		Learner-controlled	A5, A13, A17
		Self-assessment of outcomes	A3
Context		Context	A3, A16, A17
		Contextual	A1, A8
		Organizational context	A2
		Environmental factors	A1

Source: Authors' own creation

these components can be subsumed under a larger category called "action or experience." It is also about the components of support, guidance and feedback that, according to the facilitating role of each, were all grouped under a newer category called "facilitators." Other major themes were also retained as main categories. In general, what was done in the synthesis stage of is presented in Table 3.

According to the themes network (Figure 2), the most significant components of informal workplace learning were identified in 8 main categories and 11 related sub-categories:

(1) learning stimulus;
(2) awareness and intent to learn;
(3) action or experience;



Source: Authors' own creation

Figure 2. The most significant components of informal workplace learning

Table 3. Integration of themes in the synthesis stage

Main categories	Subcategories
Learning stimulus	
Awareness and intent to learn	
Action or experience	Real-life activities
	Understanding the new experience
	Trial and error
Critical reflection on action	
Facilitators	Support
	Guidance
	Feedback
Collective learning	Interaction and learning from others
	Modeling
	Collaboration
Self-directed learning	
Context	

Source: Authors' own creation

(4) critical reflection on action;
(5) facilitators;
(6) collective learning;
(7) self-directed; and
(8) context.

The purpose of Figure 2 is to provide a comprehensive picture of the nature of informal learning in the workplace, which is understood as a network of interrelated concepts. We should be able to visualize all the components and sub-components of this figure in our mind when talking about informal learning. This model also distinguishes between the components

that make up the informal learning process and those that merely show its nature and characteristics. Also, this figure clarifies the distinction between the network of informal learning concepts in the workplace from other informal learning concepts in other environments. In the following, the explanations and definitions of these components are given, along with examples of relevant texts. The relationships between the components are the result of the author's interpretation of the literature about them, except for the interrelationship of action and reflection, which is constantly mentioned directly in the literature.

Learning stimulus

A learning stimulus means the presence of an external or internal stimulus that indicates dissatisfaction with the current and conventional ways of thinking and acting (Marsick and Watkins, 2001). This stimulus can be external or internal (Marsick and Volpe, 1999). However, the external stimulus with the theme of "unusual conditions" has received more attention than the internal stimulus. "Unusual conditions" refers to encountering situations that involve new challenges, problems, or needs (Marsick and Volpe, 1999) for which conventional procedures and responses do not work (Marsick and Watkins, 1990). For example, "Informal learning often occurs just in time and as needed – anywhere and anytime – in response to challenges that call for new or modified knowledge, skills, or attitudes" (Marsick and Neaman, 2018, p. 54). This concept is also mentioned elsewhere: "Informal and incidental learning take place when people see a situation as nonroutine because, if they do not, they are more likely to respond habitually and routinely, and thus find themselves not learning" (Billett, 2000, p. 295). It is possible that sometimes learning is caused by an internal stimulus. For example, "People also learn informally for its own sake, for example to satisfy curiosity or pursue interests" (Marsick and Neaman, 2018, p. 54):

> Sometimes that awareness is driven internally, by a person's capacity to envision the future or to otherwise reappraise his or her focus and direction. Sometimes learning is anticipatory, occurring because a person wants to prepare for a future event by rehearsing, role-playing, or otherwise previewing the experience (Marsick and Volpe, 1999, p. 5).

Awareness and intent to learn

Awareness means paying attention to and being aware of the learning opportunities resulting from experience (Marsick *et al.*, 2008; Marsick and Watkins, 2001), and the intent to learn means "recognizing or being personally aware of the need to improve oneself, acquire knowledge, or build expertise" (Tannenbaum *et al.*, 2009). For example, "The degree of conscious awareness of one's learning plays an important role in the clarity of learning" (Marsick and Watkins, 1990, p. 13):

> When intent is missing, an individual may not recognize or take advantage of a potential learning opportunity. Individuals who lack intent may be less likely to reflect upon their experiences or seek feedback as a conscious means of learning and or intent to learn or improve is what differentiates informal learning from incidental learning (Tannenbaum *et al.*, 2009, pp. 307, 308).

"Informal learning is usually intentional" (Marsick and Watkins, 2001, p. 25). "It is intentional, even though goals may not be explicitly formulated; intentions direct attention and thus help learners to recognize gaps and strive to close them" (Marsick and Neaman, 2018, p. 54).

Action or experience

The action or experience component refers to purposefully engaging in an experience or action. People can use experiences to apply or test new ideas based on their prior thinking or learning objectives. By missing out on action or experience, one loses the opportunity to learn by doing (Tannenbaum *et al.*, 2009). For example, "The learning is often so intrinsic to action that it remains unarticulated and preverbal, yet evident in the actions taken by individuals and groups" (Marsick *et al.*, 2008, p. 591). "The learning comes from the application, rather than the application coming after the learning. In informal learning, one acts first and learns through the doing" (Rogers, 2014, p. 64).

Action or experience has components, the first of which is real-life activities. Real-life activities refer to the fact that informal learning takes place through authentic daily activities at work and real-life experience rather than simulation and prescription (Marsick and Volpe, 1999; Marsick and Watkins, 1990) and is organic (Marsick and Neaman, 2018; Carliner, 2017). For example, "It is the fact that our informal learning is situated in real-life activities" (Rogers, 2014, p. 40). "Informal learning is embedded in the practices of everyday work and is intrinsic to that work" (Boud and Rooney, 2018, p. 11). "Workplace learning is structured by the everyday activities and goals of the workplace" (Billett, 2000, p. 1). The features of these activities are process orientation and goal orientation, which means creating an opportunity for learners to access the process of work activities and their products or results to better understand the standards related to them (Billett, 2000). For example, "It is necessary to delineate a pathway of work activities that learners need to access" and "Making the goals for activities accessible is useful in establishing the goals to be secured in workplace practice, which then can become goals for learners" (Billett, 1996, pp. 12,13). Also, an increase in complexity and responsibility in the sequence of activities is one of their other features. For example:

> By establishing a pathway of activities of increasing accountability the learners are engaged in more demanding tasks and goals incrementally in the movement from peripheral to full participation in the workplace or expertise (Billett, 2000, p. 11).

Also, another example shows "The need to sequence workplace activities that are of increasing complexity which permit the learner to experience incrementally more accountable tasks and goals" (Billett, 1996, p. 12).

The second component of action or experience is understanding the new experience. "Understanding the new experience" includes framing the new experience, comparing it with previous experiences, and using one's own interpretation to understand the new challenge (Marsick and Watkins, 2001). In this definition, there are three significant components or activities. Problem framing is "widening one's vision to include aspects of the context in which problems rest opens up multiple definitions of a situation and frees one to examine other learning-related concerns" (Marsick *et al.*, p. 575). For example, "Problem framing is critical to informal and incidental learning" (Billett, 2000, p. 296). "Success in this kind of learning always depends on the ability of the person to frame the problem appropriately" (Marsick and Watkins, 1990, p. 8). The "prior knowledge and experience" component refers to evaluating and comparing the new experience or situation with prior knowledge and experiences and identifying similarities and differences (Marsick and Watkins, 2001). This work is used to discover relevant analogies to help make sense of the new situation (Rogers, 2014). For example, "They frame the new experience based on what they learned from past experience. They assess similarities or differences" (Marsick *et al.*, p. 577). "Because it occurs whenever and wherever the need arises, adults engaging in informal learning draw on prior understanding and resources available in their context to

interpret and learn when faced with new challenges" (Marsick and Neaman, 2018, p. 53). Article A1 shares that, "informal learning, then, is subject to a person's meaning-making and interpretation" (Marsick and Neaman, 2018, p. 56). The role of such an interpretation can be understood in this example: "different subjects involved in the same experiences will identify different meanings and the same subject will also interpret the same experience in different ways at different points in time" (Gola, 2009, p. 344).

Finally, the third component of action or experience is trial and error, which means that learners try things and learn from their positive and negative consequences (Marsick and Neaman, 2018). For example, "People often say they learn by trial and error" (Marsick and Volpe, 1999, p. 6). "Workers attempt a task until they effectively perform it and, in the process of doing so, determine what they should not do when performing the task" (Carliner, 2017, p. 144). Another source discussed the role of mistakes as part of action:

> Mistakes are potent tools for learning, in part, because individuals so often feel brittle about making them. Hence, people are more likely to reflect on mistakes to determine their causes and prevent their repetition. Such learning may be informal if someone intentionally tries to learn something and reflects on mistakes in this regard (Billett, 2000, p. 291).

Critical reflection on action

"Critical reflection on action" aims at understanding experiences (Marsick and Neaman, 2018; Tannenbaum *et al.*, 2009) by looking at the actions taken, assessing their results, and returning to the underlying values and assumptions that shaped them. This leads to new insights for understanding challenges and redesigning action to address them (Marsick *et al.*, 2008; Marsick and Volpe, 1999). For example, "Reflection thus played a key role in reinforcing right action, paying attention to surprises or unexpected consequences, and thinking about alternative solutions to future problems" (Marsick and Neaman, 2018, p. 57):

> When reflection is missing, individuals may fail to uncover insights from their experiences. They are less likely to learn from, absorb, and internalize learning from experience. When individuals act without reflecting, they can fail to see connections and consequences, resulting in less than complete understanding (Tannenbaum *et al.*, 2009, p. 308).

Reflection plays an essential role in every stage of learning, including before, during, and after the action (Marsick *et al.*, 2008). Consequently, as shown in the literature, informal learning is a continuous process of action and reflection (Marsick and Volpe, 1999; Gola, 2009; Marsick and Watkins, 1990). It can be referred to as "action-reflection cycles" (Marsick and Neaman, 2018), where reviewing action-based learning leads to new understandings that enable planning for future actions by repeating a new cycle (Marsick *et al.*, 2008). Therefore, it is necessary to consider them as two components with mutual interaction, one of which will not lead to learning without the other.

Facilitators

Facilitators in these results mean the components that each help in some way to facilitate and promote appropriate informal learning in the workplace. One of these facilitators is "support." Although there is no clear definition of support for informal workplace learning in the literature, it has been referred to in various ways. For example, "for the most part people learn the skills and capabilities they need by doing their jobs and getting support from others" (Marsick and Neaman, 2018, p. 62). One of the supportive people in the workplace can be a supervisor. For example, it is said:

> Supervisor support helps ensure transfer of training and can be a key element in promoting informal learning. The research on peer support is less clear, but there can be little doubt that peers influence one another under many circumstances (Tannenbaum *et al.*, 2009, p. 316).

Also, an example of the importance of support states that:

> We found that support and feedback were critically important for confidence, learning, retention and commitment, especially during their first few months when they were best provided by the person on the spot (Eraut, 2011, p. 9).

The second facilitator is called "guidance." Guidance as a key component of knowledge development prevents shortcomings in workplace learning (Billett, 2000). For example, "When approaching workplace learning at the more general level, the question of guidance becomes essential" (Collin, 2006, p. 411). The guidance provided in the workplace can be direct or indirect in two ways (Billett, 2000): direct guidance refers to guidance provided by experts and is a significant factor in workplace learning; and indirect guidance refers to guidance provided by cues in the physical workplace environment and other workers (Billett, 2000, A15).

"Feedback" can be considered as another facilitator. Feedback is a means of providing the information needed for correct and appropriate learning from experiences. For example, "working alongside a colleague for a while enables someone to learn by asking questions and receiving feedback about shared activities and events as and when they happen" (Eraut, 2011, p. 9):

> When feedback is missing, individuals may fail to take advantage of a potentially valuable learning experience. Without feedback, individuals may misread a situation or misinterpret cues; they may also develop or operate under false assumptions (Tannenbaum *et al.*, 2009, p. 308).

Collective learning

One of the significant components of informal workplace learning is its collective nature. For example, "Informal and incidental learning has a collective dimension to it, even though individuals are the prime movers in whatever learning happens" (Billett, 2000, p. 292). "We believe that collective learning may be the distinguishing feature of workplace learning, and that it plays a particularly strong role in informal and incidental learning" (Marsick and Watkins, 1990, p. 39). "Interaction and learning from others" are some of the most significant components of collective learning. It refers to being relational and involving others in one's informal learning (Boud and Rooney, 2018), which makes people learn from encounters and relations with others at work (Marsick and Watkins, 1990), such as interaction with experts (Billett, 2000) and peers (Collin, 2006). For example, "reflection, and learning from peers are essential components of workplace learning" (Marsick and Watkins, 1990). "We believe that people learn in the workplace through interactions with others in their daily work environments when the need to learn is greatest" (Marsick and Watkins, 1990, p. 4). Another component is modeling. Modeling is the process of consciously and thoughtfully observing others at work and being influenced by their statements, behaviors, and decisions to learn about various aspects of one's role (Steinert, 2014; Schei and Nerbø, 2015). Role modeling, reflection and learning from peers are essential components of workplace learning (Steinert, 2014). The third component of collective learning refers to collaboration. For example, "Co-operation and interaction are a means for learning, but at the same time, also the focus of learning, and can take place only through working with other people" (Collin, 2006, p. 407). "Increasingly, people are being asked to work closely with others throughout their organization to develop creative new solutions to business challenges" (Marsick and Volpe, 1999, p. 9).

Self-directed learning

Self-directed learning refers to the autonomy and responsibility of the learner to use learning opportunities appropriate to their circumstances and needs to take control of their learning process. For example, "Many definitions of informal learning focus on its learner-controlled nature." Also, "In the least formal situations, learners establish their own objectives and criteria and determine when the learning is complete" (Carliner, 2017, pp. 142, 143). Also mentioned in another example for informal learning that "Control of learning rests primarily in the hands of the learner" (Marsick and Watkins, 1990, p. 12). "The second class of factors related to informal learning is associated with freedom, independence, and responsibility" (Schei and Nerbø, 2015, p. 316).

Context

Context means that informal workplace learning is influenced by and integrated into the specific context or situation in which the experience occurs (Marsick and Neaman, 2018; Marsick and Watkins, 1990). Context can mean personal, social and cultural context and or activities, processes, work methods or anything that somehow surrounds our learning and affects people's interpretation of their situation, decisions and actions (Marsick *et al.*, 2008; Marsick and Watkins, 2001; Boud and Rooney, 2018). For example, "Informal learning, like practices, is profoundly situated" and "It is necessary to understand informal learning as a phenomenon dependent on the activities, practices, and socio-material arrangements in which it is embedded" (Boud and Rooney, 2018, pp. 10, 13). Another source states: "What and how they learn depends on many external environmental factors and how other people interact with them" (Marsick and Neaman, 2018, p. 68). This role in influencing understanding and meaning-making in informal learning is especially raised (Marsick *et al.*, 2008). "Context affects the way people define the situation, the options they choose for actions, and the others they interact with and learn from" (Billett, 2000, p. 294).

Discussion and conclusion

This research study aimed to identify the most significant components of informal workplace learning using a qualitative meta-synthesis method. The results yielded eight significant components of informal workplace learning (i.e. Learning stimulus, Awareness and intent to learn, Action or experience, Critical reflection on action, Facilitators, Collective learning, Self-directed, Context). As a result, the more we see these components in a learning experience, the closer that experience will be to workplace learning in its informal sense.

According to the proposed conceptual model, four of the components shape the informal learning process. These components are those that, according to their explanations, form the initial, middle and final components of informal learning. They are learning stimulus, awareness/intent, action or experience and critical reflection on action. But other components describe the characteristic or inherent nature of informal learning. Learning stimulus is one of the most important components because the existence of an internal or external stimulus – such as an unusual condition such as a new challenge or need – is the starting point for the informal learning process. Then, to make the best use of this new learning experience, the learner must be aware of the need to learn to overcome this situation and act intentionally. If there is no awareness and intention to learn, incidental learning occurs, which may sometimes not have the necessary effectiveness. In the next stage, action or experience takes place. The importance of this component is so great that by missing out on it, one loses the opportunity to learn by doing. After an action or experience takes place, critical reflection on the action is necessary. The relationship between these two components is mutual rather than linear. So in various sources, it is referred to as "action-reflection cycles." Reflection on action brings new

insights to learners that lead them to re-experience. This cycle continues until effective learning is achieved. During the learning experience, the learner will benefit from facilitators (i.e. support, guidance and feedback), each of which helps to facilitate and promote appropriate informal learning in the workplace. Informal learning in the workplace has a collective nature. Interactions and learning from others, modeling their behavior and working together with them all play a significant part in this type of learning. During the learning process, the learner has autonomy and responsibility and directs his learning. Also, informal learning is influenced by the specific context in which the learning experience takes place.

Regarding relevant research, we can refer to the research results of Cerasoli *et al.* (2014) that the control/independence factor of task characteristics, and the support factor as effective factors in informal learning, with self-direction and support as two components of IWL, are compatible. The current research results are compatible with the research of Skule (2004) in the four important conditions that he puts forward in the conceptualization of informal learning in the workplace, including exposure to a high amount of changes, extensive professional interactions, feedback and support from the manager. Also, the results of Kyndt *et al.*'s (2018) research confirm the role of challenging work and the manager's support as key factors of informal learning. In general, the results of this research with the factors affecting informal learning, including feedback and reflection in the Janssens *et al.* (2017) research; feedback, interactions with colleagues and supervisors, and their support in Schürmann and Beausaert's (2016) research; and leadership support, feedback, and interpersonal relationships in Jeong *et al.*'s (2018) research, are compatible. However, it does not agree with the results of Schürmann and Beausaert (2016) about the lack of influence of contextual characteristics on informal learning.

This meta-synthesis contributes to the coherence and integration of the informal workplace learning literature. The obtained conceptual model, in addition to the general components of informal workplace learning, provides an explanation of the characteristics of each and the relationships between its components to achieve a complete understanding of the nature of informal workplace learning. Since no study has been done so far to comprehensively identify the most significant components of informal workplace learning, it is not possible to refer to their results in comparison with the results of the present study.

As mentioned earlier, there is little research that creates consensus in the field of informal workplace learning, and this causes a lack of mutual understanding between experts and researchers and practitioners. Therefore, the present meta-synthesis was done with an aggregation approach to synthesize the different perspectives and models in this field and create a conceptual model of informal workplace learning based on the most significant components and their relationships. This research study will contribute to the greater effectiveness of informal workplace learning by clearly identifying its most significant structural components. This conceptual model helps those involved in human resources development in organizations so that, in addition to witnessing the quantitative expansion of informal learning in the workplace, they can benefit from the numerous benefits of this learning through its qualitative improvement and greater effectiveness. This is possible by supporting informal learning through better recognition and orientation of its components. This requires a holistic approach that extends beyond a focus on employee learning in formal settings to an understanding of the role that informal learning can play. If informal learning is to be successful, appropriate structures must be provided to create learning opportunities. For example, among these cases is the use of a collaborative environment. It is necessary to have a cooperative atmosphere between learners, managers, colleagues and the learning environment designer to determine appropriate learning stimuli, create

support structures, assign appropriate tasks to learners, etc. This cooperative atmosphere can be important in terms of the fact that people accept new roles in addition to maintaining their previous roles. For example, the designer who provides appropriate learning experiences can cooperate with a colleague or manager as a coach, supporter of learning and source of information. The learner himself also plays an active role in shaping his appropriate learning experiences as a self-directed learner. Also, teaching self-directed learning skills to learners can be considered first of all.

In the case of informal learning support, specific support structures can be foreseen for this purpose. This support can be considered from two dimensions, i.e. people and resources. The support structures created need to include both support for learning and support from learning. Support for learning helps promote and encourage learning in the workplace. Informal learning should be recognized and rewarded to motivate employees. Simple acts of recognition strengthen employees' sense of achievement, competence, self-confidence and belonging. Recognizing and rewarding informal learning shows that efforts are valuable and appreciated. However, support from learning is a set of activities that help the learning process. Organizations need to make relevant information sources available, including printed or electronic books, videos, etc. Also, creating a suitable platform for peer-to-peer coaching and learning activities can be fruitful. Employees with expertise in a particular area can be encouraged to act as learning experts and support their colleagues. Also, because learning in the workplace comes from action and not the other way around, tasks can be assigned according to learning goals, and tasks can be used as a tool to create related actions. Reflection on action is necessary to integrate knowledge and skills and transfer learning, providing the opportunity to reflect on the real conditions of the work environment can also be practical.

This study examined sources that are generally related to informal workplace learning. Also, though the use of the qualitative meta-synthesis method, it covered the most important sources from experts in this field. Quantitative and mixed-method studies and sources were excluded from the research. The final model of the research includes the most significant components of informal workplace learning, but it does not discuss how to direct and strengthen these components in the working environment, since this was not the purpose of this research. The model resulting from this research is limited to informal learning in the workplace; therefore, findings may not be applicable to conditions and environments outside of the workplace, including schools and universities. It is recommended that future studies consider informal learning in varied environments since informal learning is a broad concept that includes learning in many areas. Also, other researchers can further develop the existing model by including quantitative and mixed-methods studies. Another fruitful path for future study would be prescriptions for strengthening the components of an informal learning experience in the workplace to improve learning. Research studies that implement informal workplace learning experiences and study resultant learning outcomes are also recommended.

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