Informal Learning Guide

WORD OF THANKS

This project is developed in cooperation with
The University of Leuven.

Project Team
Sophie Cuinen, Pieter Jan Heymans, Nina Meeus, Joke Van den Wouwel, Yana Van Dorst, Caroline Vereycken and Saar Verwimp

Supported by
Prof. Dr. F. Dochy (University of Leuven)
Mr. P. Belpaire (EAPRIL)

Follow-up EAPRIL
Inneke Berghmans & Anke Claes
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ABSTRACT

The problem statement given by EAPRIL covers learning analytics of informal learning, or the question that there’s a possibility to measure the efficiency of informal learning. This mixed-method study examines the learning analytics for informal learning in the workplace on the basis of a questionnaire and interviews. The sample for the questionnaire consisted of 212 respondents and the sample of the interviews consisted of ten people. An attempt is made to formulate an answer to the following questions:

- What are the different ways in which informal learning can take place?
- Why do companies pay so little attention to informal learning?
- Is informal learning recommended by research?
- Is there a possibility to measure the efficiency of informal learning?

The results show that informal learning gets more attention than expected but remains complex. In addition, measuring informal learning continues to be an issue. Various ethical issues and the expanse of informal learning make it difficult to convert these activities in figures. This study is relevant for the management, learning & development (L&D) employees of companies to organise to informal learning. Researches can also use this study as a basis for further research on the learning analytics for informal learning.
Chapter 1: Introduction
1 Introduction

In cooperation with the organisation EAPRIL we launched a research on informal learning. The previous project group collaborating with EAPRIL showed that there is still a large uncertainty about the effectiveness of informal learning and how this can be measured. Informal learning is often marginalised in scientific research as a result of lacking understanding about the subject (Jeltsen, 2010). The aim of this project is to bridge the gap between scientific and practice-oriented research about informal learning and in this way cater to the shortcomings that exist in the field of informal learning. With this project, we want to acquire knowledge about informal learning. We will put specific emphasis on learning analytics given the prevailing business logic of 'measuring is knowing'. With the emphasis on learning analytics, we believe that we are more likely to excite organisations for the meaning of informal learning.

1.1 Research Questions

To achieve this goal, we conducted first of all an exploratory literature study. Here are our four resulting research questions:

- What are the different ways in which informal learning can take place?
- Why do companies seemingly have so little attention for informal learning?
- Is informal learning recommended by research?
- Is there a possibility to measure the efficiency of informal learning?

We researched learning analytics linked with concepts such as informal learning, research on informal learning, the contrast with formal and incidental learning and execution-as-learning. In what follows, you will find the four different research questions with a short scientific framing.
1.1.1 What are the different ways in which informal learning can take place?

To verify the effectiveness of informal learning, it is important to first take a look at the various ways in which informal learning can take place. First, informal learning includes a wide range of practices and may take place on just about any place and any time. In our further research we will try to bring this large amount of practice to a manageable whole. Various factors such as intention, consciousness and expectations determine whether we learn more informal or formal. Every time there is learned formally, there will also be informal learned (Eraut, 2004). It is not that formal learning is ‘bad’ and informal learning is ‘good’. One strives to no strict distinction between formal and informal learning, but to conceive it as a continuum. So agrees Eraut (2004): "I prefer to define informal learning informal learning axis that comes closer to the end than the formal end of the continuum" (Eraut, 2004, p. 250). Researchers agree that the degree of formalisation is the criterion here. A strict distinction has been sworn off because each learning activity is characterised by both formal or informal properties (Kyndt & Raes, n.d.).

Second, informal learning can adopt different forms. A lot of researchers and scientists have already tried to organise and name this variety of forms. So ranks Eraut (2004) informal learning of implied learning to reactive learning and finally deliberate learning, in which the distinction is the degree of intent. Implicit learning is learning without that we are aware of this and with absence of explicit knowledge about what exactly is learned. Reactive learning is intentional and takes place during an action leaving little time to think. Finally, deliberate learning has the final goal to learn. It generates new knowledge and there is a clear commitment in activities such as planning and problem solving (Eraut, 2004). In addition, the input of Eraut (2004) stressed that informal learning takes shape through doing, thinking and communicating.
These processes end in a particular outcome such as a product, interaction, decisions and so on.

Because of the fact we go through a different world of experiences, thoughts and encounters, each learning process is different. This is again an explanation for the complexity of learning. As we like to make a worthy contribution to filling up the lack of understanding around informal learning, we will mainly focus on informal learning in the workplace. With this focused look, we hope to lay a piece of the puzzle. In this research we will continue looking for the ways in which informal learning can take place. This both from a thorough literature review and practical experiences of informal learning in the workplace.

1.1.2 Why do companies seemingly have so little attention for informal learning?

Because of the large size of informal learning it is easy to overlook some learning activities.

This can give a false picture about the effectiveness. Nevertheless, informal learning appears to be constantly present in companies. So is said in the research of Borghans, Golsteyn, & de Grip (2007) that 94% of the time is spent on informal learning. This shows that informal learning has a very large power.

Baert, Clauwaert and Van Bree (2008) state in their research that informal learning is only a few years in advance at companies. According to them, it was before these years considered as a useless investment that would not lead to any benefit. From the 1980s on, however, it became increasingly important. Our knowledge-based society requires companies to become more and more encouraging towards their employees to think autonomously and to deal with new challenges. The costs that informal learning entails, are an additional reason for the attention deficit.
For example, a focus on learning and a big difference between productive and educational tasks lead to learning a lot but with high costs. These high costs can arise because companies send their employees to trainings and/or workshops. This means that workers are not present in the company and thus are not able to do their task, which will cost the company money. In addition, the company must also pay the cost for participating in training sessions and/or workshops. It is up to companies to provide productive and educational tasks. In this way, informal learning can occur with a very low cost and no loss of productivity (Borghans et al., 2007). We can see a shift here from execution-as-efficiency to execution-as-learning. **Execution-as-efficiency** mainly attaches importance to the production of goods and less to learning within the organisation. The emphasis is on producing and making profit. Companies and organisations that focus on **execution-as-learning** spend a great deal of importance to learning in the workplace (Edmondson, 2008).

Not all companies work with this body of thought which is why there is still not much investment in informal learning.

While there is evidence of the importance and effectiveness of informal learning, many organisations don’t see this importance yet. Because of this, they still spend most of their learning budget on formal training sessions.

1.1.3 Is informal learning recommended by research?

Based on the literature, we can conclude that informal learning indeed is **recommended** by research. First of all, we noticed that a lot of research is available, which makes that there are all kinds of definitions and forms formulated on informal learning. The popularity of this subject can possibly be linked to the fact that researchers want to make people aware of the usefulness of informal learning. The European Learning Compass (EAPRIL, 2014) found that there is very little known about informal learning and its effectiveness.
Baert et al. (2008) state in their research that much research has been conducted on the necessary **conditions** to stimulate informal learning. The large attention is because informal learning is important for the development of knowledge of the workers (Borghans et al., 2007). Thus, the promotion of informal learning contributes to the development of individual and collective competences (Eraut, 2004). In addition, Kyndt, Dochy and Nijs (2009) state that:

**Informal learning** is more efficient than formal training when it comes to learning job related skills and obtaining knowledge, because these specific skills and knowledge are less appreciated in formal education and the learners frequently lack the necessary insight to put theory into practice. Formal learning on its own is not sufficient to anticipate the evolutions in society since it takes too long to set it up (Kyndt et al., 2009, p. 369-370).

We noticed that research praises informal learning and shows a great interest.

1.1.4 **Is there a possibility to measure the efficiency?**

Out of research we can conclude that measuring informal learning is not an easy task. The lack of a single definition and framework makes it thereby dangerous to overlook forms of informal learning. Measuring the efficiency of it will be a **challenging** task. The European Learning Compass (EAPRIL, 2014) states that some important key concepts emerged that we can use for a further literature study on measuring informal learning, also called learning analytics. In this study of EAPRIL (2014) the focus lays more on the measurement of formal learning.

The possibilities to measure informal learning after this short study still are largely unknown. Further research is needed to create more clarity.
1.2 Conclusion

Now that we have a conceptual basis of some concepts and questions, we will conduct an in-depth literature review to further investigate.

From this we can put a light on the practical side of informal learning and make connections between the theory and practice of informal learning and learning analytics for informal learning.
Chapter 2: Theoretical Framework
2 Theoretical Framework

2.1 Informal learning

2.1.1 What is informal learning?

Informal learning is a complex phenomenon linked with many different interpretations in the existing literature. If we want to create a consensus we will need to base this on the same definition. Therefore, we appeal to the definition given by Kyndt et al. (2009). They describe informal learning as follow:

"Informal learning is described as an unplanned and implicit process with unpredictable results (Hager, 1998). This "every day" learning process has a self-evident character and takes place in the daily working situation (Tjepkema, 2002; Van Biesen, 1989). It is never organised or intentional from the learner’s point of view (OECD, n.d.). It is seen as the development of the individual through interaction with others (Marsick and Watkins, 1990).

Informal learning often happens spontaneously and unconsciously without any priori stated objectives in terms of learning outcomes. According to Baert et al. (2000) informal learning is an important determinant for the professionalisation of employees and organisations." (Kyndt et al., 2009, p.370).

Informal learning includes a wide number of learning experiences. In this project we will mainly focus on learning within companies and organisations. Workplace learning, which we regard as an overarching term, contains both formal and informal learning. Here we will mainly focus on the informal dimension of this concept. We use the following definition of workplace learning (Baert et al., 2008):
A process of sustainable change of the existing competency reservoir, respectively knowledge, skills and attitudes of employees and groups of employees. This happens in situations at or near the workplace with objective quality implementation and progress of the work as a main objective. ‘What’ (learning outcome), ‘how’ (learning process) and ‘when’ (learning period) something is learned, initially lies in the hands of the learning employee and in the work processes in which he or she fulfils a role. Other actors in the organisation can also facilitate or encourage learning by the more or less formalised policy creating conditions in the (working) environment of the employee. As a result a wide spectrum of learning workforms will be covered. Depending on the degree of awareness of the learner the competency development can be more or less intentional or incidental and more or less serious or profound (Baert et al., 2008, P.20) (translated).

2.1.2 The dynamic model of informal learning

To create a comprehensive picture of informal learning, we use the dynamic model of Tannenbaum, Beard, McNall & Salas (2009). In this model, they talk about four main components that affect the effectiveness of informal learning. These components shouldn’t be seen as sequential, but merely as factors that exist in this model. The model can be referred as dynamic since these components are in constant interaction with each other. In addition, there is a division between input factors, that affect the process of informal learning, and output factors, these are the potential outcomes of informal learning. Both input and output factors can be divided into situational / organisational characteristics and individual characteristics.
The four **key factors** in this model, we will use as a support when we look at informal learning. Since it is a clear and comprehensive model, we have chosen to use this one.

**Figure 1. Key Factors of the model of Tannenbaum (2009).**

The four components used in this model are: intent to learn, experience/action, feedback and reflection. In what follows, we will explain these four factors. We will also discuss why and how each component contributes to learning.

**The intention to learn** is represented in this model as the motivation or the recognition of a certain need to learn. In the text of Tannenbaum et al. (2009) there is argued that this motivation in various studies is related to training, effectiveness and learning.

Increased motivation among the staff of an organisation, allows for more intent to learn, which in turn contributes to more effectiveness.

**Experience and action** are central concepts of informal learning. Tannenbaum et al. (2009) describe experience and action as the means through which informal learning takes place. Experiences are situations where individuals new ideas, based on learning objectives and previous reflection, can test or apply. The application of these new ideas is considered a key concept in training because this expanding experiences supports. These non-routinueuse activities require increased attention, a more thorough reflection and stimulate the informal learning process of employees.

The third concept of this model is **feedback**. As mentioned above is gaining experiences very important. However, one should keep in mind that experiences does not automatically lead to correct learning.
It is possible that one remembers wrong aspects from these experiences or just a part of the experience. To avoid this, feedback is an important component. Feedback provides individuals information to learn the right thing from their experiences. In the context of informal learning feedback can be both direct and indirect. In the case of direct feedback we think of individuals who ask questions to Council colleagues about their personal performance. Indirect feedback can be obtained by people asking about their experience and the consequences of their actions. However, this comment must be made. Tannenbaum et al. (2009) have indicated that research shows different results about improving performance through feedback. Not every feedback is conducive to the performance of others. A survey conducted by Gielen, Peeters, Dochy, Onghena & Struyven (2010) shows that there exist different perspectives for giving effective feedback. The first perspective relates to the degree of accuracy and consistency that the providers of feedback persist. The second perspective defines the feedback-quality in terms of the content and/or style characteristics.

The last component in the model of Tannenbaum et al. (2009) is reflection. This element clarifies the relationship between action and result and helps to motivate employees to look up multiple learning experiences. Reflection is in this model described as a conscious effort to give meaning to one's experiences. The concept can get multiple interpretations: one can reflect by using self-criticism or identify any possible pitfalls.

**Input-factors**

The model of Tannenbaum et al. (2009) is further enhanced with factors that can influence the effectiveness of informal learning (Tannenbaum et al., 2009).
As pointed out in our chosen definition of informal learning there is already support for the idea that informal learning takes place in the daily work situation, so in the context in which someone practices his job (Kyndt et al., 2009). It is here that the employees are offered opportunities to learn. However, what will be learned, is influenced by both the context in which the opportunities for learning are offered as well as personal characteristics of the individual. It are these factors, organisational and at individual level, which will be discussed further on in the model of Tannenbaum et al. (2009).

Organisational and situational characteristics

First of all the model speaks about the organisational and situational factors. These factors relate to the climate of the organisation, the learning opportunities, time, support/encouragement, tools and processes and the strategic vision. Below we will further clarify these factors. When the organisation has a climate where training and learning are important, then this has a positive effect on the effectiveness of training and feedback. In addition, it would also increase the transfer of these trainings.

Figure 2. Model of Tannenbaum et al. (2009).
It is however about the valuation of formal learning in the organisation. To learn more about the influence on informal learning is additional research is needed. However, we can safely say that the spontaneous nature of informal learning ensures that there is a need for other forms of support than when it comes to formal learning (Tannenbaum et al., 2009).

A second organisational factor are the learning opportunities that an organisation offers to its employees. Certain characteristics of an organisation ensure that more informal learning can take place. So for example, the possibility would be to ask for feedback to colleagues or managers. Many of these characteristics, however, are unique to each organisation. As a result, it is difficult to give a general overview of this. A third factor is the time. Employees today are under constant working pressure and have limited free time. How can we yet informal learning? Executives would furnish by, for example, moments for informal learning can provide time for a discussion and feedback-moments.

Another factor is the support/encouragement that the organisation provides. Employees who are aware of the importance of informal learning and the contexts in which this occurs, will find themselves more involved in supporting informal learning (Tannenbaum et al., 2009). Tools and processes can also be enabled in the organisation. This should increase the reflection of employees and turn them on to informal learning. This may go about tracking diaries, personal learning contracts and so on (Tannenbaum et al., 2009).

The last situational factor is the strategic vision of learning that embodies the organisation. In this context, it is essential that the organisation recognises the importance of informal learning. Only then will the workers more receptive to informal learning opportunities. The organisation must create a good relationship between formal and informal learning.
In addition to the organisational factors which are discussed in the model of Tannenbaum et al. (2009), there still is a component that affects informal learning: **the business size**. Research shows that large companies would invest more in formal training and small businesses more in informal learning (Van Klaveren, 2008).

**Individual characteristics**

Tannenbaum et al. (2009) also describe individual characteristics in their model. These characteristics include motivation, personal characteristics, self-awareness, feedback orientation and self-efficacy.

A first individual attribute consists of the **motivation** of the learner, in this case the employee. Individuals with greater motivation to learn (intent), to undertake or look up things (action), to reflect (reflection) and to receive feedback will be more participative in informal learning and will benefit more from it.

Chao (2009) states that several studies have pointed out that there are various different factors why adults participate in learning. For example we have social relations (making friends and meeting others), external expectations (fulfilling all the comforts and conveniences of someone else with a certain authority), social welfare (the desire to serve others and/or to serve the community), professional advancement (the desire for professional progress), flight/stimulation (to relieve boredom or the work routine and/or to flee the home situation) and cognitive interest (learning to learn) (Chao, 2009).

The **personality characteristics of the employee** is the second factor cited in the model. Tannenbaum et al. (2009) cited four elements on the personality characteristics of workers. They talk about the internal locus of control, self-worth, goal orientation and conscientiousness. First of all, the element internal locus of control is further elaborated.
This refers to the degree in which an individual believes that the appearance of ratification is under his or her control. Research shows that individuals with an internal locus of control are more motivated to learn. More employees are inclined to believe that they can improve their skills and are therefore more motivated to participate in developments that benefit their learning. A second element of personality characteristics is self-worth. This is about the affective evaluation of the individual. Research indicates that an employee with a high self-worth participates more often in activities that promote development such as mentoring.

The third element is goal orientation. This covers the goals that the learners are pursuing and the behaviors that they perform to achieve these goals. Examples include the focus on learning or focus on performing (Tannenbaum et al., 2009). A final element consists of the conscientiousness of workers.

As defined in the master thesis of Salmon (2009) this is about "task orientation and successfully achieving certain objectives." Individuals who possess conscientiousness are well organised and have a great sense of responsibility. They have a strong urge to perform. In addition, Tannenbaum et al. (2009) also describes some positive aspects of conscientiousness, namely that this would ensure a higher self-efficacy, which is positive related to learning. A third factor is self-awareness of the individual employees. Individuals are naturally inclined not to view themselves objective. As a result we often develop biases whereby we link failures due to external factors and successes to internal factors. These biases can be reduced by optimising the meta cognitive skills of workers. Self-awareness is part of this meta cognitive skills (Tannenbaum et al., 2009). This concept gets at least three different definitions in the literature. The definition we will apply is the one Church (1997) uses.
Self-awareness here is formulated as the ability to reflect on your own behavior and to judge your own behavior and skills, that manifest themselves in the workplace, accurately (Church, 1997). A penultimate factor is feedback-orientation. This concept can be formulated as the tendency of the employee to seek and appreciate feedback. Individuals with a clear feedback orientation detect more frequently discrepancies between self-perception and the perception of others about their behavior. This can help to improve their own behavior, to which others think it’s needed. Feedback is according to Tannenbaum et al. (2009) seen as one of the key components for the process of informal learning.

The final factor that we mentioned above is self-efficacy. This is in the text of Tannenbaum et al. (2009) formulated as the faith in the abilities of someone to organise and to carry out operations necessary to achieve certain goals. The role of self-efficacy is according to Tannenbaum et al. (2009) already demonstrated as positive for formal learning. Research conducted by Dinther, Dochy and Segers (2011) shows that self-efficacy is a key factor for learning since it positively influences the motivation and learning. In addition, Woerkom (2003) cited that self-efficacy has a positive effect on knowledge sharing and asking for feedback. Also Bandura (1977) cites a positive element of self-efficacy, namely that this has a positive effect on the confidence of the employee. Research into the role of self-efficacy in informal learning, however, is still necessary.

**Potential outcomes**

**Organisational outcomes**

A context of informal learning in organisations can exert a positive influence on readiness / capabilities of the organisation, employee retention, the learning culture of the organisation and the agility to be flexible to cope with changes.

First of all, they talk about readiness/capabilities to compete on the market.
This means that informal learning has a positive influence on the possibilities and the readiness of the organisation to respond on changes and opportunities in the labour market. **Retain skilled employees** ensures that the organisation can secure its position in the labor market. This is because the knowledge and skills of employees play a central role in the ability to remain economically competitive (Kyndt, Dochy, Michielsen & Moeyaert, 2008).

There is also a potential outcome that benefits **the learning culture** in the organisation. A learning culture can be defined as a cultural system that focuses on the production of new knowledge for sustainable social and economic order (McWilliam, 2010). The concept of **agility** includes a strong adaptability and flexibility. It is seen as a solution to maintain a competitive advantage in times of turbulence and uncertainty in the business environment (Baskerville, Mathiassen, & Pries-Heje, 2005). The purpose of a specific kind of analytics depends on the context in which they are collected and for what they will be used for (Cooper, 2012). Several factors have ensured that analytics are used more, such as increased availability, detail, volume and variability of data. Besides that, the multiple series and the maturity of techniques ensure that analytics become easier and wider.

Also an increased pressure for companies and efficiently educational organisations puts the importance of analytics in the foreground (Cooper, 2012). The potential of analytics to help evaluate past actions and to predict the effects of future actions, so they can make better decisions and create more effective strategies (Cooper, 2012). Analytics have great potential for businesses. Yet many organisations still don’t use this wealth of information they collect systematically. Collecting and storing the data, is in fact one side of the story. It is more important to effectively use the collected data.
A challenge for management in organisations is, to get the most benefit from the insights that analytics can provide (MacNeill, 2012).

**Individual outcomes**

Informal learning may also exert an influence on individual factors. It can exert an influence on learning, performance, commitment, motivation, self-efficacy and adaptability.

The first factor is **learning as a result of informal learning**. This learning can be framed within continuous learning. The employee can learn different things during informal learning. **Performance** can also be improved by the knowledge gained in the informal learning process. Employees learn new skills and knowledge that they can apply in the following projects or future situations and challenges. In addition, there can be exerted an influence on the **commitment** of workers. Informal learning contributes to greater dedication in the organisation.

**Motivation** is a factor that has already been explained above. Learning new skills motivates employees to learn even more. Also, **self-efficacy** was already discussed. The process of informal learning can contribute to an increased self-efficacy, which again can contribute to a positive influence on formal learning. The influence of self-efficacy on informal learning hasn’t been sufficiently investigated. Finally, informal learning can exert an influence on the **adaptability of workers**. Thus, the experiences from which knowledge and skills can arise, contribute to a faster response from the employee to certain situations (Tannenbaum et al., 2009).

2.1.3 Why informal learning?

Informal learning is continuously present in the workplace. Borghans et al. (2007) showed that 94% of the time is spent on informal learning. The remaining percentage of the learning can be attributed to formal mechanisms.
In addition there is the **70-20-10 model** that argues the following:

70 percent of learning comes from the job experiences, tasks, and problem solving; 20 percent comes from feedback and examples (good and bad); and 10 percent comes from courses and reading. In other words, 90% of learning is informal and only 10% is formal (Mattox, 2012, p. 50).

If we compare informal learning with **formal training**, it appears that informal learning in the workplace is more effective and leads to better learning outcomes than formal learning (Van Ruysseveldt & Van Dijke, 2012). This is because informal learning takes place in an authentic setting which promotes the development and transfer of knowledge. So argues Billett (1995): “It is held that in a situated approach to learning, the authenticity of activity and circumstances assist the development of knowledge and its transfer” (p.2).

Formal training often can’t meet the ever-changing and complex work context. **Workplace learning** may meet these requirements (Versleegher, 2012). Where formal training is often a limited medium for the development of certain skills, the opportunity for workplace learning allows employees to develop the necessary knowledge and skills.

We find agreement in the literature about informal learning possessing a great force. However, we must be critical on the 70-20-10 model. There is no certainty about the origin of the model, and there is a lack of empirical evidence to support this model. Despite these shortcomings, the model has had much influence in practice and people have become more aware of the importance of informal learning in organisations (Kajewski & Madsen, 2013).
Further informal learning encourages productivity, economical growth and competitiveness of organisations in the long term, and it is favourable for employment and employability of labor (Van Ruysseveldt & Van Dijke, 2012). In addition to these beneficial effects of informal learning, it is also important to indicate that informal learning is cost effective: one learns at much lower cost (Versleegers, 2012). For organisations, this is obviously an important argument for investing in workplace learning.

The investment in informal learning also had positive effects for the workers. Informal learning opportunities leads to increased flexibility, allowing employees to adapt to organisational changes. The opportunity for informal learning reduces stress, which in turn leads to greater well-being and health of employees. Further, it is also a positive stimulator for the work motivation (Van Ruysseveldt & Van Dijke, 2012).

Finally, informal learning has the advantage that one learns to fit in in the organisation itself because they learn about the culture of the organisation. This is also called labor socialisation: through informal learning moments a new employee is integrated in the company, he learns about the business and professional culture and develops his own personality in terms of what is usual within the profession (Koot & den Dekker, 1999).

There are also positive factors of informal learning which can be found in the model of Tannenbaum et al. (2009). These will be added below in table 1 (p. 20).

However, there are also disadvantages to informal learning. Informal learning has a naturally unnoted character. It is so embedded in the daily activities that it is difficult to recognise (Duerings, 2011). This makes it difficult to get hold of informal learning and it is difficult to measure (EAPRIL, 2014). Another disadvantage is that there is no certificate or diploma linked to informal learning (Frietman, Kennis, & Hövels, 2010).
In this way it cannot be explicitly demonstrated that an employee has acquired a particular competency. Finally, there is the risk that unreliable information is exchanged during the process of knowledge. It is not easy to immediately transmit the right information and knowledge to others (Krauthammer, 2012).

2.1.4 Conditions of informal learning

There are several conditions that affect the informal learning process and determine to what extent and in what ways there is being learned.

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<td>- No certificate or diploma</td>
<td>- There may be unreliable information</td>
</tr>
<tr>
<td>- There may be unreliable information</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Advantages and disadvantages with regard to informal learning.
We use the according to Baert et al. (2008) described levels that have to be included to get a global view on the informal learning atmosphere: the personal characteristics, the positive learning climate in the workplace, the L&D-policy and the learning infrastructure.

Figure 3. Levels of Baert et al. (2008) to gain an insight into the formal learning atmosphere.

First, we must also take the micro level into account. The micro level covers the personal characteristics and perceptions of the learner (Baert, 2008). To what extent and in which ways an employee engages in informal learning, is related to his own attitude and knowledge base.

According to Versleegers (2012) there are plenty of individual properties that affect the continuum of informal learning attitudes. Term of office within an organisation, correlates negatively with informal learning opportunities. So, it was concluded that the longer someone is in service, the less informally is learned. Furthermore, someone’s age has an influence on the learning processes. As regards learning opportunities, we know young employees will encounter more learning opportunities because of the higher training yields when one’s younger (Van Klaveren, 2008). A possible consequence of this statement is the fact that young workers might be more actively encouraged to learning in an informally way. Age also has an impact on the learning process because different generations engage in different forms of learning. Kluwer (2013) concluded for instance that the minus 30-year-olds have a more pronounced preference for informal learning and learning through social media. Gender is also a personality trait which leads to
different attitudes and learning processes. Versleegers (2012) concluded that men have more contact with the supervisor, read more professional literature, and learn more often individually. According to this study, women have more opportunities to learn in various tasks and experience more encouragement to learn (Versleegers, 2012). Owning the English language skill increases the communication which in turn leads to an increment of informal learning and learning from colleagues. An open, inquisitive attitude, is the most influential factor for informal learning (Versleegers, 2012). On the micro level the attitudes, perceptions and personality of the employee are crucial for the informal learning process in a company.

The second level that Baert et al. (2008) considers as important is the **positive learning climate in the workplace**: is there a rich environment being offered and does there rule a learning-friendly organisational culture? This level was examined by a lot of researchers.

An initial investigation, carried out by the consultation company CARA (2010), states that the transfer of informal learning to job-related activities is the greatest when it takes place in a framework of social and personal interaction. The different contexts which stimulate informal learning in the workplace the most, are employee/teaminitated sharing sessions/collaboration (75%), mentoring (61%), coaching (61%) and performance support materials and systems (53%). In addition Van Ruysseveldt and Van Dijk (2012) concluded that an increase in workload stimulates the workplace learning, especially at low and moderate levels of workload. A requirement is that the condition ‘autonomy’ must be moderate or high. On high levels of workload, the workplace learning can only be promoted when autonomy is high. They cite that organisations through task (re)design can aim for optimal combinations of workload and autonomy for workplace learning.
According to the relevant research, the following combinations of workload and autonomy are the most desirable: combinations which preserve the energy of the employee intact, which offers time and room for learning activities such as reflection, exploration and experiment and combinations which intend sufficient possibilities for active intervention in the work situation.

Furthermore, according to the research of Kyndt and Raes (n.d.), there are two ways of dealing with conflicts and problems in organisations. First, there’s the 'gap-approach'. This means that problems are being solved on the basis of already existing rules and procedures. Second, there is the ‘appreciative approach’, which includes the encouraging of the employees to address problems in an innovative way. The first approach has the advantage of being a quick way for finding a solution. The disadvantage, however, is that in this way the solution will render only at short notice. The ‘appreciative approach’ provides a solution in the long term. The disadvantage here is that this approach requires more investment. The question of which approach provides the best solution, depends on the specific problem. If we take a look at the learning potential of both approaches, we remark that the learning potential is greater when using the ‘appreciative approach’. As cited above, this approach stimulates the employees to address problems on an innovative way. This can be linked to the learning climate. The ‘appreciative approach’ ensures that a positive learning climate can arise in which employees can find answers and solutions (Kyndt & Raes, n.d.).

Baert et al. (2008) describe the third level as the L&D-policy of the organisation which both relates to the informal as the formal learning. In the text one defines it as follows:

Baert et al. (2008) describe the third level as the L&D-policy of the organisation which both relates to the informal as the formal learning. In the text one defines it as follows:
Formation, training and education refer to the set of activities and efforts that promote the learning process of professional and voluntary staff. This includes the development of their competencies with a view to a better, a more high-quality functioning in the performance of functions and duties that are part of the task and the mission of the organisation, and with a view to enabling the employees to contribute to the development of knowledge in the organisation (Baert et al., 2008, p.24, translated).

Recently one speaks more about the ‘learning policy’ instead of the L&D-policy because of the fact that it contains more the informal learning, formal learning and training. Baert et al. (2008) also speak about input areas to stimulate informal learning. They propose a series of measures that organisations can undertake to create favourable conditions for informal learning.

Ideals to which an organisation must strive to create a good learning policy, are a strong mission and policy vision, a facilitating management style, a decentralised structure, an open communication system, a learning organisation culture and learning employees.

The fourth level that Baert et al. (2008) describes is the learning infrastructure as a condition for informal learning in the workplace. According to these researchers the learning infrastructure is "the support of all types of formal and informal learning- and regulation activities of team members – including the corresponding resources and people that provide support- and conditions that affect learning" (Baert et al., p. 27, translated). This learning infrastructure is closely intertwined with the context of the organisation, which according to Frietman et al. (2010) is considered crucial. They argue that, because it’s about ‘managing while retaining the informal nature’, it is important to pay attention to making changes in the context of the work.
In addition, they argue that both among employees who are prepared to engage in learning processes as with those who are not, a stimulating work environment increases the participation to education. The researchers of this study decide that ‘the preservation of the informal component’ controls the border. This means that the control is limited to the creation of a correct and challenging context to learn. This is possible on the basis of certain structures and systems, such as time to engage with each other, spaces for informal consultation and proximity of groups. They also indicate the fact that formal and informal learning influence each other mutually, and that these forms of learning are only effective in their reciprocity. According to this research there is a need for the right climate and the right conditions for informal learning. Tjepkema (2003) considers a favorable learning environment as an environment with a high variation in tasks, the ability to collaborate with colleagues, and the enrichment of tasks. Such an environment is according to Frietman et al. (2010) created by two central figures: the leader who facilitates, provides feedback and takes care of a shared vision, and the employee who is motivated and takes time to reflect. Also Baert et al. (2008) see the importance of these two key figures who provide support for the workplace learning. As regards this support, Baert et al. (2008) discuss that this occurs in the form of social support of the team leader who provides feedback, coaches and encourages reflection. Furthermore, top managers might contribute to creating favourable conditions for workplace learning by motivating the team members, giving space for learning and experimentation, and monitoring work. The fellow team members of colleagues can also be considered as a potential source of support. They might be a support by giving advice and helping by the search for explanations or solutions for tricky problems. Finally, there also exist material resources such as workplace instructions, manuals and information systems which provide relevant
information and support workplace learning (Baert et al., 2008). Krauthammer (2010) also discusses some of the things a manager can undertake to encourage informal learning in the organisation. This corresponds very strongly to the last level of Baert et al. (2008). Firstly, there are things a manager can do for himself to promote informal learning.

Figure 4. Levels of Baert et al. (2008) to gain an insight into the formal learning atmosphere
Secondly, the manager can give signals to his employees. Furthermore, the manager has to pay attention to frequent interaction with the employees. Fourthly, informal learning has to be implemented in the entire organisation. Finally, the manager has to link informal learning with e-learning. These five elements will be discussed further below.

First of all, the manager himself can undertake certain actions to learning on an informal way. For example, when employees come up with new ideas, it is the managers’ duty to welcome this and use these ideas for further refinement. Several employees will have the intention to share their knowledge and ideas with others. It is up to the manager to stimulate and motivate the staff. With this, the manager is expected to acknowledge the importance of learning within the organisation. He also needs to transform the belief in knowledge-sharing into motivation by his employees.

This motivation can be enhanced by creating certain on-the-job experiences (Krauthammer, 2012).

Secondly, there are signals the manager can give to his employees to support informal learning. This coaching should both focus on basic skills of the employees and on ambitious skills. These two skills are the building blocks of solid personalised coaching. Furthermore, the actions and information exchange that take place in the workplace have to be confidential. Indeed, the employees are not always aware of certain consequences of this knowledge-sharing process. It isn’t self-evident to transfer the right information and knowledge to others. It is important the manager makes sure the passing of unreliable information is limited and that the uncertainty about the reliability of the information is transformed to a certainty. Besides, the manager must ensure that there’s attention being paid to the social welfare of the employees. Feeling good in the organisation is linked to the degree of psychological safety.
Psychological safety is described as the shared belief that the environment is safe for interpersonal risk taking (Edmondson, 1999). The employees dare to give their opinion or discuss errors without fear to be rejected (Edmondson, 1999). In addition, there should be an opportunity to face-to-face interaction. This type of interaction is considered more important than virtual encounters. Although virtual interaction takes less time and reduces certain costs, face-to-face interaction is preferred. It is up to the manager to develop a recognition reflex to help others. The recognition of others plays a very important role in the motivation of employees. To work properly, the compliments must be given at a good time and in an appropriate way. In addition, the manager must show an openness for the arising of new ideas. This openness encourages interaction between employees which is an incentive for informal learning. Furthermore, it is important that managers suggest concrete goals. This is considered as a crucial support managers van provide.

By providing this support, certain doubts and fears of the employees can be reduced. Finally, the manager has to help in guiding the various applications of the employees to decent results (Krauthammer, 2012).

Thirdly, the manager has to invest in interaction with his staff to promote informal learning in the organisation. It is important that the manager helps his employees adapting to the demands of the public and going in interaction with the public. There is a difference between merely informing the public and inspiring. This step is very difficult for knowledge-sharers. But adapting to a public can have a positive impact. Furthermore there needs to be ensured that opportunities for confidential behavior are maximised. Finally, it is important to integrate the team logic in the various working groups. The diversity at the employees in organisations is often low, undervalued and too little exploited. Managers can help by creating an environment in a team where the productivity is increased.
This can be influenced by stimulating working groups to integrate individuals with different styles and expertise into a team (Krauthammer, 2012).

Next, informal learning must be implemented in the entire organisation. Here it is crucial that there is a control mechanism presenting the knowledge-sharing process. This means that you must enter into a kind of conversation with someone else or yourself to verify that certain knowledge is correct. Next there needs to be ensured that there is a transactive memory system present at the staff in the organisation. It is intended that all employees know who possesses which knowledge or skills. Finally, it is essential that the organisation engages in boundary spanning.

This means that the employees and executives break through the mental, physical or organisational boundaries through the exchange of information, views and ideas (Decuyper, Dochy & Van den Bossche, 2010).

Boundary spanning can be both horizontally and vertically, and can take place between different stakeholders. In addition, it can also relate to the crossing of demographic or geographical borders (Yip, Ernst & Campbell, 2011). Furthermore there must be the possibility for individuals, groups, higher functions and managers, to communicate frequently and to learn from each other. The responsible people for learning and top managers must be moving: they should move from observer to promoter (Krauthammer, 2012).

Finally, the manager has to link informal learning link with e-learning and Learning Management System (LMS). E-learning is seen by many organisations as a key component. The right e-Tools can be used for many different purposes. Furthermore, LMS is a software package that allows companies to manage e-learning. Through LMS, employees can be registered for courses, courses can be made available and tests can be decreased.
This creates a kind of online school in which both the learner and executive can follow the progress. There are, however, more complex learning management systems with more specialised functions. These have a higher cost than a normal learning management system (Jacobs, 2007).

Therefore this is one of the points of interests when a company works with e-learning and learning management systems works. One must always take into account the cost, feasibility and limitations (Krauthammer, 2012).

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Figure 5. Building blocks to create favorable conditions for informal learning (Krauthammer, 2012, Baert et al., 2008).
2.1.5 Relation with formal learning

The relationship between formal and informal learning can be considered as **reciprocal**. On the one hand promotes formal learning, informal learning moments, informal learning also contributes to greater effectiveness of formal training.

We can conclude that informal and formal learning are complementary (Frietman et al., 2010). Several researchers recommend not to make a strict distinction between formal and informal learning but to summarise it as a continuum. Eraut agrees: "I prefer to define informal learning as learning that comes closer to the end informal than the formal end of the continuum" (Eraut, 2004, p 250.). It is generally agreed that the degree of formalisation here is the criterion. A strict distinction swears it off because every learning activity is surely characterised by both formal and informal characteristics (Kyndt & Raes, n.d.).

Because of the reciprocal relationship between formal and informal learning, it is a wrong notion that organisations must choose between one of these two forms of learning. In an organisation formal training will always be needed and informal learning can thereby enhance the effect of formal learning (Marsick & Watkins, 2001). Both formal and informal learning opportunities should therefore be viewed as important elements of workplace learning. This comment was made by Dale and Bell (1999) who argued that informal learning should not replace the formal learning: "It is the synergy between bone healing learning activities that will produce effective growth" (Versleegers, 2012, p.13). Formal learning can be regarded as a building block to enable personal development, while informal learning promotes the development of formal learning. Recent studies have also found evidence that a combination of formal and informal learning increases the employability of workers.
All the above arguments make clear that a mix of formal and informal learning in the workplace is necessary (Versleegers, 2012).

This synergy between formal and informal learning is repeatedly cited by Weistra (n.d.). Learning by Weistra (n.d.) divided into four components, namely the learning process, the location and setting, the learning objectives and finally the learning content.

These four components can possess characteristics of learning formal or informal. However, learning is not whether formal or informal. Weistra (n.d.) sees this rather placed on a continuum. Learning can be formal or informal greater or lesser extent.

Below is an overview of the different features that may have formal and informal activities (Weistra, n.d.).

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Formal</th>
<th>Informal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process</strong></td>
<td>Intentional learning activities</td>
<td>Incidental learning activities</td>
</tr>
<tr>
<td></td>
<td>Structured by the teacher</td>
<td>Byproduct of the work</td>
</tr>
<tr>
<td></td>
<td>Teacher-centered</td>
<td>Learning-centered</td>
</tr>
<tr>
<td></td>
<td>Guidance by teacher/mentor</td>
<td>Guidance by colleagues</td>
</tr>
<tr>
<td></td>
<td>Official assessment</td>
<td>No assessment</td>
</tr>
<tr>
<td><strong>Place and setting</strong></td>
<td>Training location</td>
<td>Workplace</td>
</tr>
<tr>
<td></td>
<td>Structured curriculum</td>
<td>No specific curriculum</td>
</tr>
<tr>
<td></td>
<td>External certification</td>
<td>No certification</td>
</tr>
<tr>
<td><strong>Goals</strong></td>
<td>Learning primary goals</td>
<td>Work primary goals</td>
</tr>
<tr>
<td></td>
<td>Predetermined goals</td>
<td>Flexible/ad hoc goals</td>
</tr>
<tr>
<td><strong>Learning content</strong></td>
<td>Expert knowledge</td>
<td>Practical knowledge</td>
</tr>
<tr>
<td></td>
<td>Codified knowledge</td>
<td>Individual/implicit knowledge</td>
</tr>
<tr>
<td></td>
<td>Formal knowledge with a high status</td>
<td>Daily/pragmatic knowledge</td>
</tr>
</tbody>
</table>

Tabel 2. Degree of formality of learning activities (Weistra, n.d.)
2.2 Learning analytics

2.2.1 Analytics

According to Greller & Dachsler (2012) we live in a data economy today. There is an increasing interest for new data-collection techniques. The motivations for collecting these data are to improve the quality, effectiveness and efficiency. One of these data-collection techniques are the analytics that will be discussed below.

‘Analytics’ is a broad term and there are different views and definitions for the term. The term can refer to both the product as well as the process of data collection. We focus her mainly on analytics as a process. We use the definition of Slade and Prinsloo (2013) who describes analytics as the collection, analysis, use and dissemination of data, from for example reports and descriptions, with the aim to provide cognitive, effective and administrative support to organisations. This results in the process-oriented question of how data of informal learning can be collected in companies.

There are several communities of analytics that can be seen as different perspectives because the mutual boundaries are so vague. The communities in which we mainly based our research are web analytics and social network analytics.

Web analytics is the collection of data from the use of pages on the web. We can distinguish two forms here: on-site and off-site.

For on-site web analytics they use the web page of their own organisation. It collects data of the activities of workers on a certain site and shows how much or how long they are surfing on the site. Off-site web analytics involves the use of other sites, besides their own web page. It is thus a wider network of services and product (Cooper, 2012).

Social network analytics collect data from the use of social networks. Social networks are increasingly popular today and are used to communicate between employers and employees.
A study of COPD (2010) also shows that 81% of the respondents believe that social media provides dignified learning for employees. The consequence of this is that more than 82% of the workers are using social media in order to promote the development of professional skills. Besides the focus on social networking, social network analytics, we can also see the direct interaction between people.

Marsick and Volpe (1999) mention that companies are constantly subject to change, so that employees increasingly need to focus on lifelong learning. Organisations therefore need to acquire knowledge about the learning process.

To better understand learning analytics we use the model of Greller and Drachsler (2012). This model provides six critical dimensions that affect learning analytics: internal limitations, external constraints, stakeholders, objectives, data and instruments. For each dimension, multiple interpretations can be given. Internal limitations may include the competencies of employers. These competencies may eliminate or improve the collection of learning analytics. External constraints can prevent the collection of learning analytics. These are for example the norms and conventions that apply in the business or in the community where the company is located.

**2.2.2 Learning Analytics**

The analytics discussed above can be specified in learning analytics. These learning analytics are data collected in an educational context. Although the business world today strongly focusses on collecting data, the domain of learning analytics is not well known yet. Yet many advantages are associated with collecting these data.

![Figure 6. Two types of analytics side by side](image)
The instruments used to collect learning analytics can also have a positive and a negative impact on the learning analytics. In addition, there is also an influence on the type of data and the purpose for which this data is used (objectives). Datasets can be open (public) or closed (accessible for a limited number of people) and used for either reflection or prediction.

A final critical dimension are the stakeholders involved in the process of learning analytics. We can divide these stakeholders into two categories. For example, there are, on the one hand, data and clients and on the other side data subjects. Data clients are individuals who benefit from the collected learning analytics. Data subjects are the individuals from whom these learning analytics were derived. However these two groups may overlap. Sometimes the data subjects are data clients as well.

![Figure 7. Critical dimensions of learning analytics (Greller & Drachsler, 2012)](image)
The collection of learning analytics is therefore a dynamic and complex process, taking into account multiple processes and factors. An example of this are the many ethical and legal issues of learning analytics that must be taken into account. MacNeill (2012) points in the CETIS Analytics series on the importance of these issues during research, for example the clarity of definitions, voluntary participation, the possible consequences, and so on.

2.2.3 Learning analytics for informal learning

The European Learning Compass

Although that the European Learning Compass (EAPRIL, 2014) is focused on learning analytics for formal learning, they also frequently refer to results, including learning analytics, of informal learning. After studying literature around informal learning, we have collected a lot of information to add to the European Learning Compass (EAPRIL, 2014).

The on practice-based Learning Compass found other learning analytics for informal learning than was the case in this investigation. We will explain the relevant information of the European Learning Compass for our research below (EAPRIL, 2014).

According to the European Learning Compass uncovering learning analytics is relevant to learning trends and to measure learning and development extensions in Europe. In the European Learning Compass it is concluded that 75% of the identified analytics are related to classical training. It is derived that in Europe there is still a main focus is on formal training activities. Only 40% of the informal learning model corresponds to the contemporary learning analytics. This (hidden) analytics of informal learning are especially linked to the contextual analysis of organisational factors. Individual, outcome (effectiveness), and school climate measurements are, according to the European Learning Compass, under-represented.
This results in a dominant focus on traditional measurements, while new developments of the informal workplace learning in organisations are ignored. This proves once again that there is a demand for further research (EAPRIL, 2014).

The results of the learning analytics in the European Learning Compass (EAPRIL, 2014) are compared with the informal learning framework of Tannenbaum et al. (2009).

Carried out by the data there came some analysis learning analytics for informal learning to light, which are compared with the different contextual factors of the model of Tannenbaum et al. (2009). Generally it is decided that 40% of the found learning analytics corresponds to the model and the remaining 60% do not fit the model. The model of Tannenbaum et al. (2009) represents four crucial components that affect the success of informal learning. In short these are: the intent of the learner, the experience or activities, feedback and reflection.

The comparative data analysis shows that there is only the intention of the learner and the other three factors are not measured.

There is thus a gap between the theoretical and the practical focus areas. The by Tannenbaum formulated components, individual learning characteristics and informal learning outcomes are not sufficiently integrated into the already existing learning analytics.

Future measurements must, according to the European Learning Compass, aim for an integration of formal and informal measurements to a clear comparison that is usable for the learning and development of workers (EAPRIL, 2014).

In line with this conclusion there is research on the relevance of a European benchmark tool. To what extent will a European reference framework get meaning? With developing such a calibration tool EAPRIL (2014) proposes to put the focus on a macro or on a micro level.
When companies want to compare in general and want to form a global view it is relevant to map the hot topics of a company. If one wants to gauge concrete benchmarks and best practices, a macro-level analysis is less essential and an analysis at micro level is recommended. This requires that the context will be charged and contact has to be made with the human resource (HR) managers. Finally, it is recommended to increase the visibility by setting up online profiles to build a strong network.

This learning analytics will contribute to creating a relevant benchmark to increase the comparability (in numbers) between companies. Even though the European Learning Compass offers some very relevant insights for our research, it is still important to accentuate on a difference in starting point. The learning analytics that are formulated by EAPRIL are focussed on a product (consisting of digits) that would allow international comparability.

Whereas the learning analytics that are used here, gauge a (process-oriented) data-collection that tries to map informal learning and wants to demonstrate its relevance. Because of this difference in definition there follows an overview below, about the additional literature study of learning analytics concerning informal learning (EAPRIL, 2014).

**Further literature study about learning analytics for informal learning**

The European Learning Compass (EAPRIL, 2014) focused mainly on learning analytics of formal learning in organisations. Yet, recently there is a growing attention for informal learning in companies. If we want to translate this informal learning to learning analytics, we must seek out new ways of measurements.

Therefore we must consider whether it is possible to measure this informal learning process. Formal learning is relatively easy to measure since the material is well defined and it is possible to propose certain goals to the measurements (Mattox, 2012).
According to Mattox (2012) it is a Prometheus task to organise the contents of informal learning in a meaningful structure. This makes it almost impossible to be able to register its effect. Moreover, it is more practical to think into the **different types** of informal learning, such as:

Querying the presence of these types can make us reflect on informal learning in companies and may tell us more about its effectiveness (Mattox, 2012). Despite the fact that informal learning is difficult to chart, MacNeil (2012) discusses there is a way to collect ‘Big Data’.

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**Figure 8. Different types of informal learning (Mattox, 2012).**

<table>
<thead>
<tr>
<th>Communities of practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is described as organizing platforms, targeted on a particular theme, role or function.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Virtual knowledge sharing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Done through websites, Wikipedia, social networking sites and blogs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mentoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expresses itself in a relationship between different persons involving persons with the most knowledge and experience who help and guide people with less knowledge and experience.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>The learning process is accompanied by one or more persons.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>On-the-job experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Translates itself into the work experience of employees.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance support systems and job aids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is seen as resources that benefit performance at work.</td>
</tr>
</tbody>
</table>
He understands a large collection of detailed data from which patterns can be derived (MacNeil, 2012, p. 6). He indicates for instance the program 'RescueTime', which shows how much time is spent on the computer. The HR manager can get visibility on those activities that are the most common. Thus there are, according to MacNeil (2012), a number of tools which make it possible to classify the time effectively, to influence workers, to abstract activities to take a first step in the measurement of learning. Of course we must, with this type of initiatives and interventions, be aware of the ethical issues associated with this, as mentioned before (see 2.2). Rights, such as "the privacy law", must for the mapping of these personal activities be charged accurately (MacNeil, 2012).

In addition, this type of measurements can lead to a **visualisation** of (unconscious) activities.

According to MacNeil (2012), visualisation and static information helps to pursue goals and does it make possible for learning processes to lead to learning and training. This also leads to a certain 'quantified self', which means that people come to self-knowledge through the collection of data about their behavior (Duval & Facilitates, 2012). In other words they argue that measuring informal activities can be a driving force to focus more on certain (relevant) areas. Also, they indicate that a tool that visualises turns out to be more usable, understandable and organised. This allows both the learner as the one who want to stimulate, such as the HR manager, to find their way in the complex word of informal learning (MacNeil, 2012).

For more clarity in the field of informal learning we will, based on this literature study, edit and spread a questionnaire and qualitative interviews.
Chapter 3: Methodology
3 Methods

In our study we used questionnaires and interviews. The sample of our survey exists of 212 respondents working in different organisations. Among these employees were 120 men, 56.6%, and 92 women, 43.4%. We aimed to reach the widest possible international audience. To achieve this goal, we translated our questions in English and the questionnaire was kept limited and accessible. All the questions had multiple response options.

In addition, we relied on interviews with a smaller sample of ten HR staff or managers, including seven men and three women. With this qualitative interviews we aimed to gather more in-depth information. We formulated open questions in an interview guide. Furthermore, we have strived to keep our sample representative. This in order to maintain the validity and reliability of our research. The quantitative data are complementary for the qualitative data. Therefore, this study could be regarded as a mixed method study.
Chapter 4: Results & Discussion
4 Results and discussion

4.1 Questionaire

To be able to interpret and analyse the results from our online questionnaire, we will compare this with the theoretical framework. We will discuss both the main overall results as make comparisons between different groups based on gender, business size and age.

Our online survey shows that 93.03% of the employees find informal learning important and want to optimise this in his or her organisation. It is considered essential that employees recognise the importance of informal learning if one wants to experience the effectiveness. It’s thus favourable that so many employees indicate that there is a **positive climate** around informal learning. We can link these findings to a research made by CARA (2010) which shows that 90% of the respondents encourage informal learning because they find it necessary for the development of knowledge (CARA, 2010). There is a big shift discernible in the way in which employees want to stay up to date. They have less need for classroom training and have a preference for informal learning (Kluwer, 2013). This is in line with the results of our survey which demonstrates that the vast majority (93.03%) of the employees, wants to commit on informal learning.

Although 93.03% of the employees indicate that informal learning is important, the results show that 76.16% believe there is enough **support** for informal learning. Informal learning thus wins in popularity but it isn’t yet supported by a lot of organisations. From the Learning Indicator we know that HR managers are limited in the process of encouraging informal learning and knowledge sharing within and outside the organisation. Although the employees tend to informal learning, HR still attaches more importance to **formal learning** (Kluwer, 2013).
This may explain why only 76.16% of the employees indicates there is sufficient support for informal learning vis-à-vis the 93.03% the respondents who find informal learning important.

In the results of this questionnaire there is a perceptible **difference between the sexes**. In the results of the following question: ‘Informal learning is important and I want to optimise this in my organisation’ 90.91% of men answered that this is applicable. 95.9% of the women indicated that this was the case. Although the difference is small, we can link it to a finding from the Learning Indicator. This study shows that informal workplace learning, more specifically the learning of colleagues and managers, is more popular among women than men (Kluwer, 2013). In addition, only 74.74% of the men think the organisation provides enough support for informal learning. In the category of women this is 78.09%. Although this difference is rather small, the difference is contrary to the investigation of Van Ruysseveldt and Van Dijke (2012).

In fact, it argues that men report more learning opportunities than women.

In addition to sex, we have compared the results over the two largest age categories: the 50- to 60-year-olds (20.8%) and the 21- to 25-year olds (18.9%). When asked if ‘informal learning is important and I want to optimise this in my organisation’ there is no big difference between the two age groups: it is appropriate for 93.93% of the young respondents and for 91.42% of the older respondents. Research on the relationship between informal learning and age shows conflicting results. The Learning Indicator argues that young employees have a different view at training and development than older colleagues. So minus 30-year-olds have a more pronounced preference for informal learning (Kluwer, 2010). Other research shows that older employees are more involved in informal learning (Berg & Chyung, 2008).
The results of our survey indicate that the young generation finds informal learning somewhat more important, but the difference is so tiny that we conclude that both generations are on the same line.

There is a difference in generations when looking at their opinion on the level of support for informal learning. Of the 21- to 25-year-olds 93.93% says there is enough support. When we look at the 50- to 60-year-olds we see that there is only 74.14% who thinks there is enough support. Thus we can see that the younger generation is experiencing more support. This can be linked to the fact that a lot of companies invest more in young employees because the training output is higher. In the field of informal learning one will therefore for example actively encourage the direct contact between experienced staff and young and less experienced staff (SEO Economisch Onderzoek, 2008). This may explain why young employees experience more support when learning on an informal way.

Finally, we can also look at the business size. From research we know that big companies invest more in formal training and small companies bet more intensive on informal learning (Van Klaveren, 2008). For this we find no evidence. In the large companies 94.94% of the employees said they find informal learning important and want to maximise this in the organisation. In the small companies, this percentage is lower, 87.18%. As for the support, the large companies with 76.76% and the small businesses with 76.93% are on the same line. They both seem to judge that the organisation provides sufficient support for informal learning.

Next the tangible and intangible resources were investigated. These resources make it possible for the employees to refine their knowledge. 88.95% of the employees feel that the organisation provides sufficient resources to improve knowledge. As regards material resources, the vast majority (85.4%) uses ICT resources to learn.
This is in line with the results of the Learning Indicator showing that the importance of online applications increases. 74% of the respondents says that the importance of e-learning and webinars increases (CARA, 2010). As regards to social media, 50% of our respondents make use of this. This is less than expected if we compare this with the investigation of CARA (2010). This shows that 81% of the respondents believe social media offers valuable learning opportunities for employees. 82% of the employees uses social media to promote the development of professional skills (CARA, 2010). Our survey shows that only half of the employees is convinced of the value of social media as a tool to develop knowledge. In terms of gender and age there is no meaningful difference found between the different groups. This is contrary to the results of the Learning Indicator: resulting that social media is especially popular with the younger generation and that they use this most frequently to stay up-to-date (Kluwer, 2010;CAA, 2010).

In addition to the material sources, an organisation can also offer **immaterial resources**. The results of our survey show that 32.93% of the employees consider autonomy as the most applicable. Both men (37.63%) as women (26.76%) place autonomy in the first place. Mentoring is at the last place (7.19%) followed by coaching (4.17%). These two forms of learning are most often referred to as not applicable. This statement is surprising when we compare the results with the investigation of CARA (2010). This research showed that both by mentoring and coaching 61% of workers believe that this is a good approach for informal learning. In this investigation of CARA (2010) mentoring and coaching get a second and third place. When focusing on **gender**, we see that most men find mentoring (8.42%) the least applicable and most women the receiving of feedback (6.58%). Also in terms of **age** there are some differences in answers.
Of the minus 25-year-olds, the majority finds autonomy (34.38%) participation (33.33%) and cooperative (33.33%) the most applicable. Mentoring (3.03%) and communication (3.03%) is the least applicable according to the young generation. The 50- to 60-year-olds find communication the most applicable (37.5%). Participation (9.68%) and receiving feedback (9.38%) is the least applicable. There is little research available about immaterial resources in practice. Therefore we cannot compare our results relative to other practice-oriented research.

If we look at business size, we see that small companies think cooperation is the most appropriate (29.73%). The big companies choose autonomy (35.42%) as the most appropriate. Most small businesses find mentoring the least applicable (8.11%) and big companies participation (4.12%) and cooperative (4.08%).

In addition, the way in which organisations deal with problems has an influence on the informal learning. 50% of the employees indicate that the company expects to be able to search for solutions in a creative way. 36.6% of respondents reported that they will solve problems in a systematic way. 5.2% says that problems are not being solved and 8.1% indicates that problems are solved in another way, such as via a mix of systematic and innovative methods. These results prove that the ‘appreciative approach’ is dominant according to half of the respondents. Which approach is most appropriate depends on the type of problem, but in any case the ‘appreciative approach’ leads to greater learning potential (Kyndt & Raes, n.d.). We can conclude that the majority of respondents gets the chance to participate in decision making and to look for creative solutions, which is a stimulator of the learning process.

When asked if informal learning is measured in the organisation, 35.09% replies that this is definitely not applicable and 8.65% indicates that it is weakly applicable. On the other hand, 4.09% says that measuring informal learning is certainly applicable.
The group responding that the measurement of informal learning is well applicable, is 14.62%. In addition, 17.54% says that it is applicable. This is in line with the research conducted by Kluwer (2013). This research shows that very few HR managers measure the impact of a training at the team- and business results. Concerning this research, employees don’t experience that their organisation controls if what has been learned, is being applied and if there is a result after a training. This is reflected in our results.

Furthermore, we can make some interesting comparisons on the basis of the answers to this question. In the women’s answers, the majority (36.11%) responds that the measurement of informal learning is weakly applicable within their organisation. Among the men, the majority (38.38%) replies that it is absolutely not happening. Despite the results mentioned above, 64.09% of all respondents indicates that learning analytics are being used, whether or not in minimum level.

Looking at age, none of the 21-to 25-year-olds indicate that the measurement of informal learning is certainly applicable. At the 50-to 60-year-olds, 5.71% believes that it is certainly applicable. On the basis of this results we can conclude that the older generation, although the number is also very low, is more aware of the measurement of informal learning in the workplace. Little to no research on this subject is available. It is because of the lack of research on this theme that this project was started.

The question about the measurement of informal learning is followed by a short question which is part of the previous one. This question examines the ways in which informal learning is measured. The most common example is evaluation. One of the answers is the following one: "The only measurement comes indirectly through the employee evaluation process where scores are given in function of the achievement of job related and specific goals."
“This includes indirectly the acquirement of knowledge required to perform the function in accordance with the function description.”

Baert et al. (2008) cite there are certain **immaterial resources**, provided by the organisation, which can increase the effect of informal learning. Kyndt and Raes (n.d.) indicate evaluation as learning condition or immaterial resource that affects informal learning in the workplace. In the literature, evaluation is seen as a learning condition which has an effect on informal learning, while in practice it is seen as a tool to measure the effects of informal learning. Other answers to the question are: performance appraisals, handing out awards for the persons who contribute the most to innovation, the number of publications in peer-reviewed scientific journals, a conversation to appreciate performances, surveys, (qualification) tests and a separate database for skills. Another answer that stands out is: “We discuss on something about our goals and results of work when we are in a break time like lunch, coffee break etc. We talk and advice about our strengths and weaknesses in these times. But there is no systematic evaluation of informal learning. In short, informal learnings are measured in an informal way”. We can link this reaction to the investigation of Frietman et al. (2010) who say that the management of informal learning is limited to the creation of a correct and challenging context to learn. They emphasise that this is a result of the fact that, despite the ‘control’, the informal nature of learning has to be preserved.

Next there is probed to the **infrastructure** of the organisation. 63.16% of the respondents finds that the infrastructure of the company offers sufficient opportunities for informal learning as well as for the development of the employees. Both for gender as for age there are no remarkable differences in the given responses. In each category the majority indicates ‘sufficient’.
As mentioned above there are according to Baert et al. (2008) different conditions that affect informal learning and the development of the employees. The infrastructure of the organisation can influence these conditions: the personal characteristics, the positive learning climate, the L&D-policy and the learning infrastructure. Also Frietman et al. (2010) confirm this: according to them, one must address the context of learning. This can be done on the basis of certain structures and systems, such as time to engage with each other, spaces for informal consultation and proximity of groups. In practice we notice that there is still some work to existing infrastructures, since only 22.81% of the respondents find that the infrastructure of their organisation offers many opportunities for informal learning. But 14.04% of our respondents find that the structure of the company offers no opportunities for informal learning and development.

The dominant view in the organisation about learning is also one of the factors that can affect the informal learning. De Cremer (2008), Edmondson (2008) and Marsick & Watkins (2001) argue there are different approaches organisations can adopt. The stronger the faith of the organisation in the interest of learning, the more employees are stimulated to learn. When the emphasis is rather on production, usually the presence of informal learning will be lower. 42.69% of respondents indicate 'learning in the organisation should be interesting both for the individual employee and the organisation itself' as the dominant vision within the own organisation. We didn’t find any important differences in the results of this question in terms of age, sex or business size. This means that in practice the majority of organisations are looking for a compromise between purely the importance of learning and the profitable function.

The last component which can contribute to informal learning is the organisation of training activities in the organisation.
91.8% of the respondents indicate this happens on frequent or annual basis or in necessary cases within the organisation. In general, 57.46% of the respondents indicate there are training activities being organised on a regular basis. One of the respondents says: “Yes frequently in team meetings, plus in so called open access (open to all employees) courses and trainings on very diverse subjects”. Only 3.06% of respondents says there are no training activities being organised. The majority of respondents who formulated an answer themselves, say that the training activities are organised on request. This is in function of career development and the needs that arise in a particular job. One of the respondents says: “Employees can propose learning activities, courses, etc. anytime; most of them are granted”. What also comes up several times, is that there is a Training & Development budget which workers are free to use. Marsick and Watkins (2001) cite it is wrong to think that organisations just have to bet on informal learning or just on formal learning. This because of the complementarity of the two forms of learning. Informal learning can be seen as a support of the formal learning and may reinforce the effect. In practice, we see that the majority of respondents pay attention to the organisation of learning opportunities and understand its importance. There is only a small minority who doesn’t. In the men’s race, 100% of the respondents indicate there are formal training activities being organised. Among the women, however, 6.9% replies that it doesn’t belong to the activities of their organisation.

Research shows conflicting results concerning the business size and investment in formal training. Based on the Learning Indicator we would expect small organisations invest more in training than large companies do (Kluwer, 2013). Other research shows that large companies spend most time and money in formal training, while small companies bet on informal learning (Van Klaveren, 2008).
In our survey all of the employees of small organisations indicated there is training being organised. In large companies this is 96.9% of the respondents. On the basis of these findings we can conclude that both large and small companies invest as much in formal training, as it is a small difference.

4.2 Interviews

The qualitative research, consisting of interviews with HR staff, was encoded on the basis of thematic analysis. Based on this method we can detect patterns, themes and core concepts which makes it possible to analyse this. The descriptions and experiences of respondents are housed in a theme which makes it easier to compare the answers. This analysis consists of six steps:

1. The collection of the data
2. Generating initial codes
3. Determining overarching themes
4. Revisiting themes
5. Defining and naming the themes
6. Linking and comparing the different interviews resulting in a final report.

In addition to the general information about the respondent and organisation, of which the data are described above, we also encrypted other themes. The remaining overarching themes that we distinguish are business culture, company structure, formal learning, informal learning and finally learning analytics of informal learning. These themes that are analysed per interview are ‘theory driven’ or ‘data driven’. In the attachment you will find a schematic representation of the answers given in the interviews. The findings are interpreted below.
4.2.1 Organisational culture

The organisation culture of an organisation is a theme that both the interviewees and the theory consider as very important. Research shows five components concerning the corporate culture: communication, collaboration, vision of learning, problems and motivation.

For example, all the interviews show that HR employees join in the vision of Kyndt en Raes (n.d.) and recognise that communication is essential in a company. Communication is an important condition of the informal learning of employees (Kyndt & Raes, n.d.). Also Marsick & Volpe (1999) agree that a good corporate culture is colored by an effective communication system. In nine out of ten interviews there is also indicated that communication has a large share in the company and that there is mutual communication.

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Table 3. Codes and themes
The interviews show that performance appraisals are organised for mutual communication. These are usually described as a two-directional conversation between employees and management in which one can speak about experiences and difficulties while working. It is important that both of them during this conversation are placed on an equal level so that there can be mutual feedback and one should be able to be critical. The respondents often didn’t agree whether this type of conversation leads to a more formal or more informal direction. We can organise these moments as a formalisation that provides opportunities to informal learning between individuals. Besides, performance appraisals can provide a good transparency between the various positions in the company as well as create a condition that makes conversation possible. The setup of a good climate and conditions can greatly promote informal learning and increase its effectiveness (Baert et al., 2008).

Two HR employees appeared to organise this kind of performance appraisals in their company. They think this method of communication is very effective for organising mutual communication. Only one interviewee indicates that there exists a gap between what is pursued and the reality. "One-way traffic comes shows up way too much", is what he/she says.

Seven out of ten interviewees literally mention the presence of 'open communication'. This creates, according to Frietman et al. (2010) a non-threatening atmosphere that lowers the barriers so informal learning will take place faster. However, it should be listed here that ‘open communication’ is a broad term thus, has many different interpretations. The fact that ‘open communication’ isn’t the same for one HR as for the other, should be taking in consideration when looking at these results. Still this ‘open communication’ gets form by using different communication channels, which, according to the majority of HR staff are used in their company.
According to numerous research, such as the one by Frietman et al. (2010), Kyndt en Raes (n.d.) and Duerings (2011) cooperation is an influencing factor for informal learning. It is remarkable that all employees say that cooperation is present in their company. The differences between them lie in the intensity of the cooperation, collaboration across different departments or within the same department and the extent to which the nature of the task requires to work in a team. Two interviewees state there is little cooperation. Further, two HR managers mention that there is cooperation between different departments and at two organisations there’s only cooperation within the same department. Within the different organisations there are different forms of cooperation that go from very extended to rather limited. Three interviewees expressed that the nature of the task and job committed them to work together to bring the task to a successful conclusion. Cooperation, which creates according to Frietman et al. (2010) a psychologically safe environment, gets according to this qualitative research partly form within companies. In addition, cooperation does not only take place within the company itself but also in the broader context.

During the interviews, four out of ten companies insisted on the importance of networking and indicated they use it in their company. Networking is seen as both expanding the own network of contacts by personal interactions with others as expanding the network on social media. According to a respondent to be successful it is necessary that people use their network on both internal and external level. People should build a good relationship within the company with the employees but also to other companies it is important to create and maintain good contacts.
In order to acquire a good internal networking program, the company of one of the respondents uses the social network site Yammer. In this way the employees can come and remain into contact with each other. The research of CARA (2012) shows that 81% of workers acknowledge the importance of social media at work and that as a result, 82% are using these networks. This would be, according to the research positive for the professional development. Networking can also be advantageous to analytics in companies, such as social network analytics which we can use to measure the direct interaction between people (Cooper, 2012). Despite all the companies working together there are still some reservations formulated by the interviewees. One HR employee mentions that knowledge today still means power and this often puts borders on the collaboration between colleagues. This may also mean a restriction for informal learning.

In addition, someone indicated that cooperation takes place but the executives don’t always have a clear view on it. Finally, two interviewees stressed the fact that cooperation can be both positive and negative. These questions ask for further research.

Research of de Cremer (2008), Edmondson (2008) & Watkins and Marsick (2001), indicate that the organisation culture is determined by the vision on learning. Research shows that if companies recognise the importance of learning and succeed to create and manage a consensus, employees will be more open for learning (Tannenbaum et al., 2009). From the interviews can be inferred that the majority of companies focusses on production. According to Edmonson (2008) this production orientation suppressed informal learning. Although initially a production-oriented and learning-oriented attitude are opposites, there are many production-oriented companies that also focus on a stimulating learning climate.
Several times the responses out of the interviews show that learning leads to increased production. Therefore learning and production may not actually be seen separately. One interviewee states that if learning would yield, there would be no longer invested in it. In addition, it is striking that six respondents indicate their company has no dominant view or that they have one but without the employees knowing anything about it. Nevertheless, more than half acknowledge the importance of informal learning, which Tannenbaum et al. (2009) names 'strategic vision'. The 'strategic vision' is a situational factor of the corporate culture that will ensure that employees will be more receptive for informal learning. It can therefore be concluded that the absence of a dominant view not immediately has an influence on whether or not to recognise and encourage informal learning.

Dealing with problems is based on the research of Kyndt en Raes (n.d.), who argue that problems or conflicts can be solved in two ways. The 'gap-approach' will solve problems systematically but leads to less long-term effect. The appreciative approach comprises an innovative way of dealing with problems which will in the long term, render more. Seven out of ten interviewees affirm that they work in an innovative way, keeping in mind the situation and the stakeholders. Yet there were three surveyed HR employees who experienced a limit to this innovative approach. They handle the innovative solution method for small problems but state that large, overarching problems must be tackled systematically and according to the rules. This leads to the conclusion that companies definitely try to use an 'appreciative approach' by solving problems. Still, there are limits that are imposed towards this innovative approach from the top of the companies. These limits may also mean a limit to informal learning. If you want to be able to implement this transcend innovative approach, the entire structure of the company needs to be adjusted.
In three out of ten interviews the term **motivation** for informal learning seemed very important. According to some of the respondents attitude and motivation are essential components in order to qualify for the job. Moreover, they also stated that employees that are unwilling to invest in learning are unable to do their job properly. Motivation was according to the respondents very important to be productive. This motivation would make the workers more incentive to informal learning and informal learning moments more effective. Motivation can also ensure that workers will contribute faster in conversation with others to share knowledge with each other. In the text of Tannenbaum et al. (2009) there is argued that this motivation in various studies is related to training, effectiveness and learning. Increased motivation among the staff of an organisation, allows for more intent to learn, which in turn contributes to greater effectiveness. It is, of course, also to the management team to stir up the motivation of the employees to learn.

**Autonomy** in the workplace can be such a motivating factor. Two of the ten interviews showed that autonomy can be an advantage to the motivation for learning. This autonomy can take form in flexible work hours or the chance to work at home. Autonomy in the execution of the work can also ensure that workers themselves will go looking for solutions which leads to learning of others. Further, autonomy provides time and space to reflect on the work process and experimentation (Van Ruysseveldt & Van Dijk, 2012).

4.2.2 **Organisational structure**

Research shows that the theme business structure contains the following important components: infrastructure and the presence of a L&D department and HR department.

**Infrastructure** is cited in a number of studies as very important for the promotion of the informal learning atmosphere.
For instance, in the investigations of Baert et al. (2008), Frietman et al. (2010) and Tannenbaum et al. (2009) this element is cited. It is one of the conditions that influences the informal learning process and determines to what extent there is learned. According to Frietman et al. (2010) the learning infrastructure is permeated with the organisational context. Changes that can be made in the context of the work, steer learning while retaining the informal nature. There is stated that a stimulating working environment significantly increases the participation in training. This control means that there is a right and challenging context to learn. Examples here are: time to get into dialogue and spaces for informal consultation. It says that when there are certain structures and systems available, informal learning will be reinforced by workers indirectly. Baert et al. (2008) and Tannenbaum et al. (2009) also give some examples: open office, networking, relaxation areas…

In connection with open spaces and stimulating workplace infrastructure, eight out of ten respondents admit that this is present in their organisation. One person mentions that it is not present and another respondent says that this is essential in a company but that there is too little attention paid to this. The examples that are most frequently cited are: joint open offices, kitchens and relaxation areas where people can sit comfortably. Very often, the workers in the companies are encouraged to have lunch together, this can be in the form of company restaurants, kitchens or some kind of cafeteria where everyone can go during intermission. The phenomenon of open space, open offices, open spaces is also very popular. Half of the respondents indicate the use of open offices to encourage communication. Seven respondents mention there are informal spaces or open spaces present where employees can stay during breaks and continue the conversation.
When we look at the presence of an L&D department it is striking that there are very many different names of it: Training & Development, Talent & Development, Research & Development or internal University. Although there is a variety of denominations, there is a focus on the same concepts: learning, development and expansion of knowledge, skills and competences. Often this section is part of the HR department. Just over half of the respondents indicates that there is a HR department in the company. These departments can be big with many employees, for example 34, but can also be very limited where there are for example only two staff members employed.

4.2.3 Formal learning

The components formal training activities, courses, on the job training and meetings, turn out to be important to the theme of formal learning. Related to the formal training activities, three out of ten respondents refer to the 70-20-10 model of Charles Jennings when asked whether there are formal training activities being organised within the organisation. The content of this model is already covered in the theoretical framework. It is important that one keeps in mind that there is no certainty about the origin of the model and that there is a lack of empirical evidence to support this model. One respondent answers that the practical field is aware of this; "Charles Jennings is a person you definitely need to look up. One of his starting points is 70-20-10, he brought this old concept back in the attention in business circles, although it has not been scientifically proven." Thereafter seven out of ten organisations turn out to invest in formal learning activities but agree that informal learning is encouraged by this at the same time.
This shows that the ideas of the majority of the respondents correspond to findings in theory: that on one hand, formal learning opportunities promote informal learning and on the other hand that informal learning contributes to greater effectiveness of formal training (Frietman et al., 2010). Of the remaining three, there are two respondents who did invest in formal training activities, but does not associate this with the informal side of learning. One out of the ten respondents said not to invest in formal learning for the sake of minor impact and the number of resources that it takes away. This respondent is proving to be a fervent supporter of the 70-20-10 model previously cited. The visions of the last three respondents on formal training activities are, from the literature point of view, the least good. This is because there is a reciprocal relationship between formal and informal learning, making it a wrong idea that organisations have to choose between one of these two forms of learning.

The best is that there are formal trainings within an organisation, whereby informal learning will strengthen its effect (Marsick & Watkins, 2001).

However, when we look at the organisation of courses 100% of respondents replied that this applies to their business. This means that one respondent, who cited earlier that they do not invest in formal training activities, underestimates the synergy between formal and informal learning within the organisation. The majority of respondents says that courses are organised for meeting certain (legal) curricula or to achieve basic competencies.

On-the-job training has not been reported by two of the ten respondents. Of the eight respondents one contributor states that they have tried out 'ob-rotation' but that it didn't work well for them. The remaining seven respondents prove all to be doing it and are experiencing positive feelings.
There are several examples of 'on-the-job training' cited that are being used in practice: job-rotation, job-coaching, performance coaching, development-coaching, career coaching, outplacement coaching and learning-on-the-job. It has been clear that in practice there are many variations on training activities that are organised within the company itself.

Eight out of ten respondents confirm that they organise meetings and consultation within the company. One speaks both about official meetings and about spontaneous consultation. In some organisations it happens weekly, in others monthly and in still others only two times a year.

4.2.4 Informal learning

The subject informal learning involves both the stimulation of an HR employee in the company and their critical attitude to this learning process. Nine out of ten respondents indicate the company made serious efforts as to stimulate its employees. For the majority, the stimulation of the HR employee is guided by the possibility to get in touch with each other. For example, some companies set up instances such as conference rooms or meetings where employees can gather and engage in discussions. Others use social media platforms to bring employees together. We can clearly see the link with the importance of the corporate structure in enabling informal learning (Baert et al., 2008). One of the respondents indicates they are working with mentorship programs. New employees are temporarily coached by an employee who has been active in the organisation for several years. This cooperation ensures a transfer of information as well as the opportunity to learn from each other. This way, the new employee not only gets the opportunity to learn about the company, but also confronts his coach with a new point of view. The ability to provide feedback to each other is very important for a learning environment.
Practices such as mentorship, informal activities and meetings can promote this, which will boost the informal learning process (Tannenbaum et al., 2009).

Nevertheless, there are some critical comments to be made with regard to informal learning. First, four out of ten respondents indicate their company makes use of the 70/20/10 model. Three of them report a critical attitude regarding this model is necessary because it is not scientifically substantiated. Despite this criticism, they still think it is an important principle because it has made clear that learning involves more than sole lecturing. This is in line with what we found in literature. There, it is also argued that the model – apart from its limitations – has been very influential because it made people aware of the importance of informal learning (Kajewski & Madsen, 2012). A second critical remark is related to the measurement of informal learning. Three out of ten respondents are indecisive when trying to measure and stimulate informal learning.

They believe managing informal learning is wrong since, according to them, this involves transforming the informal aspect into a formal one. Therefore, they believe it’s contradictory to regulate the informal, for this should only be ruled by implicit and unplanned affairs.

Research shows that informal and formal learning are to be placed on a continuum. The criterion to indicate their place on the continuum is formalisation (Kyndt & Raes, n.d.). If we want to stimulate and manage informal learning, it is no longer possible to define this as pure ‘informal’ learning. Hence, this implies a shift to formal learning. Further, these three respondents also believe the informal learning culture is spoiled by this formalisation. Therefore, they don’t agree with regulating informal learning opportunities.

Furthermore, the interviews proved the respondents believe informal learning in the workplace is very important.
Even though most companies show great interest, most of the learning budget is still being invested in formal training. According to two respondents, this might be explained by the fact that most organisations answer to audits, extern parties that monitor the organisation. Companies are required to prove their employees have acquired knowledge by showing certain certifications the employees obtained. These competences can also be acquired through informal learning, however, since the informal aspect is not tangible, formal learning moments are needed in order to validate that knowledge.

Further, the fact that informal learning is not tangible, also has another consequence. Many organisations know informal learning can be promoted by creating enjoyable spaces. Of course, this requires a lot of money and, because there are no clear effects of the informal learning, organisations prefer to invest their money in formal training sessions. One respondent has another explanation. In his company, the 70-10-10 principle is being used: people obtain 10% of their knowledge in formal networks, they acquire 20% due to feedback and examples and 70% as a result of informal moments (Mattox, 2012). According to this respondent, the investment in formal training is essential because otherwise you can’t ensure the occurrence of informal learning moments. This is a clear-cut example of the fact that formal and informal learning are complementary. After all, formal learning opportunities encourage informal learning, and vice versa. Moreover, informal learning opportunities also stimulate the effectiveness of formal training.

Taking the equality of both forms of learning into account, it seems rather odd that organisations invest more in formal training.

Finally, one contributor had a very specific view on informal learning. He believes informal learning is only meant for the top layer of employees, also called the young potentials.
In this perspective, informal learning is not expected of everyone but only of the top 10 to 15%. Management will then stimulate the informal learning opportunities of these young potentials because this is an elementary step in preparing them, in making them adapt to and feel at home in the company. In scientific literature this is called work socialisation. This defines their learning to fit in with the organisation by familiarising with the culture of the organisation (Koot & den Dekker, 1999).

4.2.5 Learning analytics for informal learning

The last topic is learning analytics for informal learning. This includes social media, web analytics and feedback and evaluation.

In the literature, social media is regularly referred to as an existing tool to bring informal learning on the map. One of the forms of informal learning is virtual knowledge sharing. This means that you can acquire new knowledge by surfing on websites and knowledge sharing on social networking sites (Mattox, 2012).

Six out of ten respondents indicated that they actively use social media to refine the knowledge of employees. The examples they cite are Twitter, Facebook, a talkingbox via Intranet, Yammer, Wiki, Lynk and communication forums on the website. Five respondents out of these six, believe that social media is quite well established in the business because it is critical to lifelong learning. One respondent indicated that the implementation of social media is fairly new but in development. The fact that an employee has the opportunity to exchange knowledge through many different media and has the ability to surf from site to site, is making it an extremely difficult task to measure the effect of this form of learning (Mattox, 2010). Nevertheless, it is possible to get a view on them by making use of web analytics, and social network analysis.
Web analytics is the data collection about the activity on the web. ‘Web analytics’ is divided into ‘on-site’ and ‘off-site’, depending on whether the data is about activity on your own website or about activity occurring elsewhere on the web that is about your products and services (Cooper, 2012, p. 6). Besides web analytics there is also social network analysis. “Social network analysis is concerned with the relationships between people, often captured in their communication networks but also in other forms of interaction such as trading” (Cooper, p. 10). Three of the ten respondents say that they are using web analytics in their company. They find this an effective way to gain insight into informal learning. In addition, they show that this makes it possible to find out which employees possess which information. Seven respondents report that web analytics and/or social network analysis isn’t used in their business. Four of them also state that they have their doubts about web analytics. They think this violates the privacy of the employees and refuse to use it. This is indeed a difficult and actual issue which is connected with web analytics. After all, there are still a lot of people who share this opinion and consider this method as unethical (Cooper, 2012).

Feedback and evaluation are important processes that were surveyed. Six out of ten respondents indicate that this is important within the company. They report that this occurs between employees reciprocally but also between employees and managers. With feedback and evaluation one aims to gain insight into the development of the employees. One looks where employees are good at and where they can evolve. Three of the six respondents are doing that to encourage social and informal learning. The respondents do not report is that this feedback and evaluation is also useful to verify whether employees the right learning from experiences, this is what we found in research of Tannenbaum et al. (2009). Three respondents indicated that feedback and evaluation are also used to capture the effects of informal learning.
One respondent believes that informal learning can’t be "measured" by using a measuring tool. Instead of measuring, informal learning is something you have to feel. After all, informal learning contains often certain philosophies and attitudes that employees must assimilate. It is up to the manager to sense and determine whether the employee has absorbed these things. Furthermore, he indicates that there is frequent use in many companies of evaluations and feedback to gain insight into the informal knowledge. By the use of self-evaluations employees should reflect on their own learning. This evaluation is then discussed several times a year with the management line. They try to follow the process of informal learning and to determine whether there is progress or not. The other two respondents also believe that following the informal learning process is primarily a matter of evaluation and feedback. Here is the manager responsible: it is up to the supervisor to assess the employees evolve on an annual basis. Besides the search for a specific instrument to assess informal learning, it is according to these respondents also a matter of good feedback and evaluation to gain insight into this implicit learning process.

Based on the synthesis of the selected L&D reports, several dominant and reoccurring themes within Europe were identified in the Learning Matrix. These findings are presented in this section. A thematic overview of the Learning Categories and the associated Learning Analytics is given, followed by findings regarding formal and informal learning. Then the top three Learning Categories are presented and analyzed.
Chapter 5: Conclusion
5 Conclusion

At the start of this research we formulated on the basis of an exploratory study four key questions, for which we have tried to find an answer in the course of the investigation. For this purpose we have carried out a more extensive literature review, a survey and semi-structured interviews. Listed below are the different responses that we have obtained from our research.

5.1 What are the different ways in which informal learning can take place?

To clarify the notion of informal learning as comprehensive as possible, we first focused on theory driven information about informal learning. The literature showed that both material and immaterial sources play a role in informal learning. Some instances of these sources are communication, participation and collaboration within the company.

We have compared these sources against the practice to determine to what extent these are applicable and accessible in companies. We concluded, on the basis of the literature study and the research carried out, that no clear-cut answer to this question is possible. This is because informal learning includes a broad spectrum of activities. Below we draw some relevant examples.

Several factors that are needed for informal learning were brought about our questionnaire. As it turned out, 88,95% of respondents find that there are enough material and immaterial resources present in their company in order to support informal learning. The most commonly used material sources are ICT resources. However, only 50% of the respondents see social media as an important tool of informal learning.
This is in contrast to the research of CARA (2010) which shows that 81% of workers acknowledge the importance of social media at work and that as a result, 82% are using these networks. In addition, there are also some immaterial sources defined. The most important component is the degree of autonomy that the employees receive at their organisation. A remarkable finding is that the youngest generation of employees don’t see communication as the main medium, while the older generation does. On the other hand, participation is very popular among the youngest groups, while for older employees it isn’t. These findings show that age indeed plays a role in informal learning in the workplace. Generally both men (37.63%) as women (26.76%) place autonomy in the first place. Mentoring is the penultimate place (7.19%) followed by coaching, in last place (4.17%).

These two forms of learning are most often referred to as not applicable. This is a surprising finding if we compare the results with the investigation of CARA (2010). The interviews also indicate multiple forms of informal learning. This showed that especially communication is seen as an important component. The ten interviewees boost communication in their organisation to better organise the transfer of information. An important discovery is that mutual communication seldom takes place. However, seven out of ten interviewees reinforced the presence of ‘open communication’. Despite the fact that this is a high number, we must take into account the ambiguity of this concept. Participation and collaboration, as ways of informal learning, rely heavily on job-characteristics and corporate structure. In some organisations there is cooperation between different departments. in other companies this can be limited to a single department. Despite there’s a difference in the level of cooperation, all HR employees indicate to organise this way of informal learning.
Cooperation, which according to Frietman et al. (2010) creates a psychologically safe environment, is according to this qualitative research partly formed within companies themself. However, one HR employee mentions that knowledge today still means power and this often puts borders on the collaboration between colleagues. In addition, the infrastructure of the company’s infrastructure can also aid the former and other ways of stimulating informal learning. Most companies we have contacted were explicitly aware of this and take care to create a more open infrastructure in their organisation. This involved mainly open desks and informal areas such as a coffee corner. From the questionnaire, including the experience of employees in companies, it turns out that there is still work to the existing infrastructures. Only 22.81% of the respondents find that the infrastructure of their organisation offers many opportunities for informal learning.

Nevertheless, 63.16% states that the infrastructure offers sufficient opportunities for informal learning while only 14.04% of our respondents find that the structure of the company offers no opportunities for informal learning and development. Finally, the importance of formal training should not be overlooked. Seven out of ten organisations invest in formal learning but at the same time they affirm that it boosts the informal learning. This shows that the ideas of the majority of our respondents are consistent with what is found in theory: that both formal learning promotes informal learning, and on the other hand that informal learning contributes to greater effectiveness of formal training (Frietman et al., 2010). This is because there is a reciprocal relationship between formal and informal learning, making it a wrong idea that organisations must choose between one of these two forms of learning. The synergy between formal and informal learning in companies is therefore too often underestimated.
5.2 Why do companies spend seemingly so little attention to informal learning?

Our research has shown that companies pay more attention to informal learning than we would expect from the literature review. There are several benefits associated with informal learning and for that reason, which makes that there is a lot of attention (table 1, p. 20). For example, the questionnaire shows that 93.03% of workers want to stimulate informal learning.

Concerning the support, we notice that 76.76% of the small companies and 76.93% of the big companies share the view that the organisation gives sufficient support for informal learning.

Next to this conclusion, the interviews also show that many companies want to give this way of learning a boost. Even though literature indicates that a production driven attitude stands in front of a stimulating attitude for informal learning, we see something different emerging from the interviews (Edmonsdon, 2008). The fact that learning leads to increased production is repeated in the interviews several times. Therefore, learning and production may not actually be seen separately.
For example, a respondent said that a right attitude and motivation to learn is necessary to be eligible to work for the company because the employees who are more motivated, are more encouraged for informal learning. They believe that employees who do not want to learn at their job cannot perform well enough on the job. It is true that production is still the main focus in companies but this is more and more often going hand in hand with informal learning.

In addition, the majority of respondents in the interviews says that employees have the opportunity to participate in the decision-making process and to help in the search for creative solutions, which is a stimulator of the learning process. Yet this innovative method clashes against the limits of the penetrated structure which is often imposed.

The solid, conservative structure that characterises many companies makes deploying and measuring informal learning difficult.

A cautionary note here is that informal learning is gaining popularity, but is not (yet) actively supported by a lot of organisations. Although 93.03% of employees indicate to find informal learning important, the results show that only 76.16% believes there is enough support to do this. Despite the large amount of advantages, there are also some drawbacks to informal learning. These can be found in the theoretical framework table 1 (p. 20).

Informal learning is a complex concept that is difficult to understand. Although the importance of informal learning is increasingly cited in research, it is clear that in reality the practice still invests more in formal learning. The reason for this is that formal learning can be measured and the learning outcome is clear, in comparison to informal learning where the effects are less clear.
5.3 Is informal learning recommended by research?

The literature shows us that informal learning is an effective form of learning. Its benefits, that emerge from different studies, can be found in the theoretical framework (Table 1, p.20). The studies from our literature show both advantages for the learner as benefits for the organisation. It is the case that the literature is trying to highlight the quality of education in all its aspects.

In addition, the interviews show that four out of ten interviewed companies rely on the 70-20-10 model. Three of them report that this model should be approached critically since it is not scientifically substantiated. Therefore, one should scientifically investigate informal learning in order to support the conclusion 70-20-10 (Kajewski & Madsen, 2013). Finally, we can conclude that literature recommends informal learning.
5.4 Is there a possibility to measure the efficiency?

Just like the wide variety of opinions on this subject in the literature, the answers of the respondents within our research contain a range of opinions. Only 4.09% of those respondents indicate that measurement of informal learning within their organisation is certainly applicable. This reflects the complexity and the ignorance in practice around the learning analytics for informal learning. 36.25% of the respondents who indicate that the measurement of informal learning is certainly applicable, well applicable or applicable, indicate the following ways for the origin of informal learning: performance appraisals, handing out awards for the persons who contribute the most to innovation, the number of publications in peer-reviewed scientific journals, a conversation to appreciate, surveys, qualification tests and a separate database for skills.

The method that is most referred to by the respondents of the survey is evaluation. Only three out of ten interviewees refer to evaluation as a method used for measuring informal learning. One of the ten respondents indicates that measuring informal learning is impossible, since in his opinion informal learning is about internalising philosophies and attitudes. Furthermore, four out of ten respondents indicate that certain measuring methods such as web analytics is a violence on privacy. Seven respondents report that web analytics and/or social network analysis are not used in their business. Both the literature and our practical research confirm that measuring informal learning is a very thorny issue. There is no all-encompassing method to measure the effects in a quantitative way. From our practical research it has become clear that informal learning can be interpreted in different ways. As a result, there is a wide variety of methods for measuring it, which everyone fills in on his own way.
It should be taken into account that when measuring informal learning, this learning process threatens to lose its informal character. Informal learning can thus become formal learning if some unconscious processes get a focus while measuring. Therefore it is recommended not to measure informal learning directly, if it already would be possible, but to measure the conditions of informal learning. Thus, companies can better invest in stimulating the (indirect) informal learning conditions instead of the (direct) informal learning process.

Literature describes different methods which could be used to measure informal learning, such as web analytics and social network analysis. However, it must be said that there are some researchers, such as Mattox (2012) who indicate that it is almost impossible to organise the contents of informal learning in a meaningful structure, which also makes it quite impossible to register its effect.
Chapter 6: Limitations
6 Limitations

Because of our limited work period and the complex data of informal learning, there are some limitations associated with this study. The several restrictions can be divided into three categories: the general limitations, the limitations associated with the questionnaire and the limitations associated with the interviews.

First of all, we had a limited period of time in order to distribute the questionnaire and to carry out the interviews. This is why the sample of both questionnaires and interviews are less varied and extensive. Furthermore, because of this lack of time, we could not delve into some interesting articles and perspectives. What we consider as interesting and valuable for further investigation will be explained below in the section 'further research'.

Secondly, there are some limitations found in the questionnaire that potentially affect the interpretation. Our sample included 212 respondents, however we must be careful because not everyone answered all questions. Besides that, we didn’t had the opportunity to find out from what nationality and sector the respondents were. More diversity in our sample, possibly would have led to different answers. After a reflection on the questionnaire, we discovered some pitfalls in the questions that were asked. The added value glossary, for example, was to create consensus but instead numerous respondents overstriked this glossary. It possibly would have been better if we had incorporated the definitions into the various questions.

Thirdly, there is also a restriction in the interviews. Our sample is less varied than hoped because of the lack of time. The ten interviewees are all from Belgium, notwithstanding that some interviewees are part of an international company. However, a clearer comparison between national and international respondents would have been useful.
Chapter 7: Future Research
7 Future Research

As mentioned above, there are some interesting results that we haven’t deepened out due to lack of time. For instance, there can be a more varied sample examined with a better distinction between nationalities and sectors. This makes a more informed comparison possible.

Several respondents from the interviews cited multiple forms of learning and coaching such as technical learning and on the job coaching, which we hadn’t found before in the literature. It is preferable to conduct further research to more forms of learning and coaching and this in connection with informal learning.

Furthermore, the answers of the questionnaire showed some methods of the measurement of informal learning, which are used in practice. It is recommended to identify this measurement strategies and to consider the extent to which they are useful and effective.

Hereby it is recommended for further research to examine the measurement of informal learning within the companies. Thus, one can consider how these measurements take place.

In general, it would be interesting to further analyse our results with a view to possible correlations. Because we focused on the four key questions of our research there are many other correlations who haven’t been reviewed yet. In addition, our report especially highlights the positive note of informal learning. However both the literature as the interviews report some possible disadvantages and borders of informal learning. Further research may provide a more complete picture of informal learning, taking into account the reality and capitalist borders.

The 70-20-10 model of Charles Jennings appeared frequently in both the research and interviews. The scientific basis of this model is not yet really demonstrated.
Further research into this model is necessary in order to demonstrate the accuracy.

We want to create a clearer picture of informal learning with this study, nevertheless it remains a big challenge to explore this complex element. With this report we already made a good foundation for further research on the learning analytics of informal learning.
8 References


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